DOCUMENT RESUME

ED 405 253 SO 026 690

AUTHOR	Walker, Lester
TITLE	Block Building for Children: Making Buildings of the World with the Ultimate Construction Toy.
REPORT NO	ISBN-0-87951-609-7
PUB DATE	95
NOTE	163p.; Photographs may not reproduce clearly.
AVAILABLE FROM	Penguin USA, 375 Hudson Ave., New York, NY 10014 ($22.95).
PUB TYPE	Books (010) -- Guides - Non-Classroom Use (055)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Architectural Education; Art Education; Building Design; Construction Materials; Design; Elementary Education; Games; *Play; *Toys
IDENTIFIERS	*Blocks

ABSTRACT

This book presents a series of projects for children of all levels of expertise, beginning with abstract patterns, rows, and towers and progressing to step-by-step instructions for 18 projects, including a bridge, boat dock, airport, shopping mall, skyscraper, castle, Greek temple, Toy Store City, City of the Future, and The Emerald City of Oz. The book proposes activities for children and parents to play together. Focus is upon developing an interest in architecture. Each project is accompanied by detailed plans, photographs, drawings, and text that informs each project's historical context. The projects are illustrated by 125 line drawings and 67 black and white photographs. (FB)

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BLOCK BUILDING FOR CHILDREN

LESTER WALKER

SO 026 690

The Overlook Press
Woodstock • New York

CAR WASH

DRIVE-IN RESTAURANT

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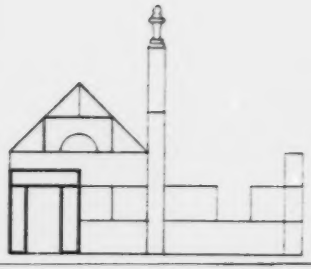
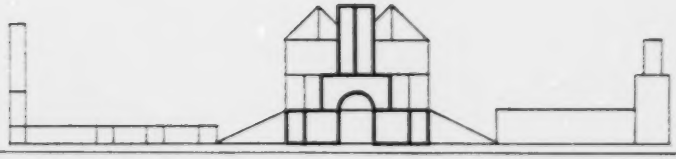
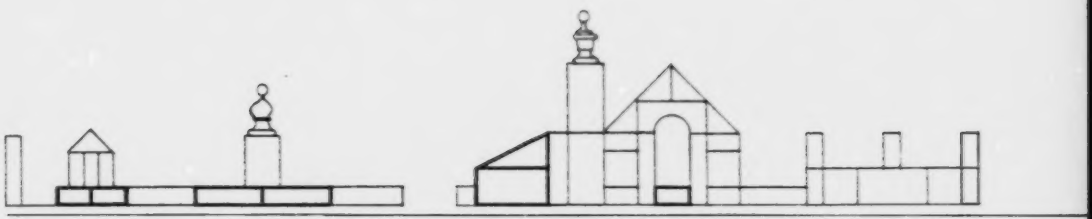


HOUSE



SHOPPING CENTER

BLOCK BUILDING FOR CHILDREN



BOAT DOCK FARM

First published in the United States in 1995 by
The Overlook Press
Lewis Hollow Road
Woodstock, New York 12498

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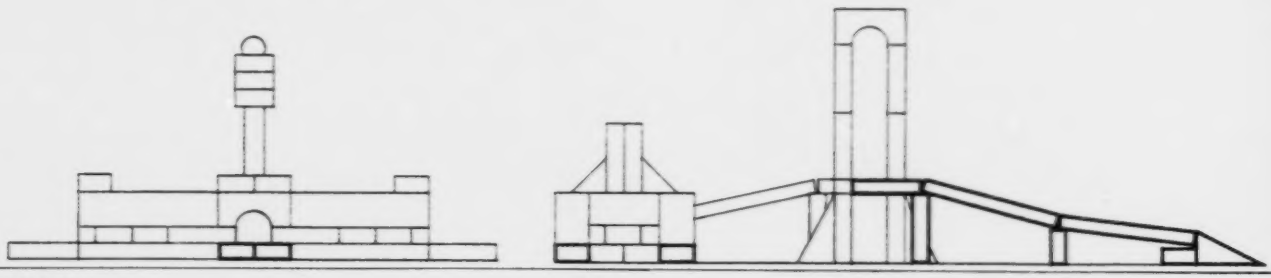
Library of Congress Cataloging-in-Publication Data

Walker, Lester
Block building for children: making buildings of the world with the ultimate construction toy/
Lester Walker: introduction by Witold Rybczynski
p. cm.
ISBN: 0-87951-609-7
1. Block building (Children's activity) I. Title.
GV1218.B6W35 1995
790.1'33—dc20
95-18655
CIP

Book design by Lester Walker

First American Edition
987654321

Manufactured in the United States of America



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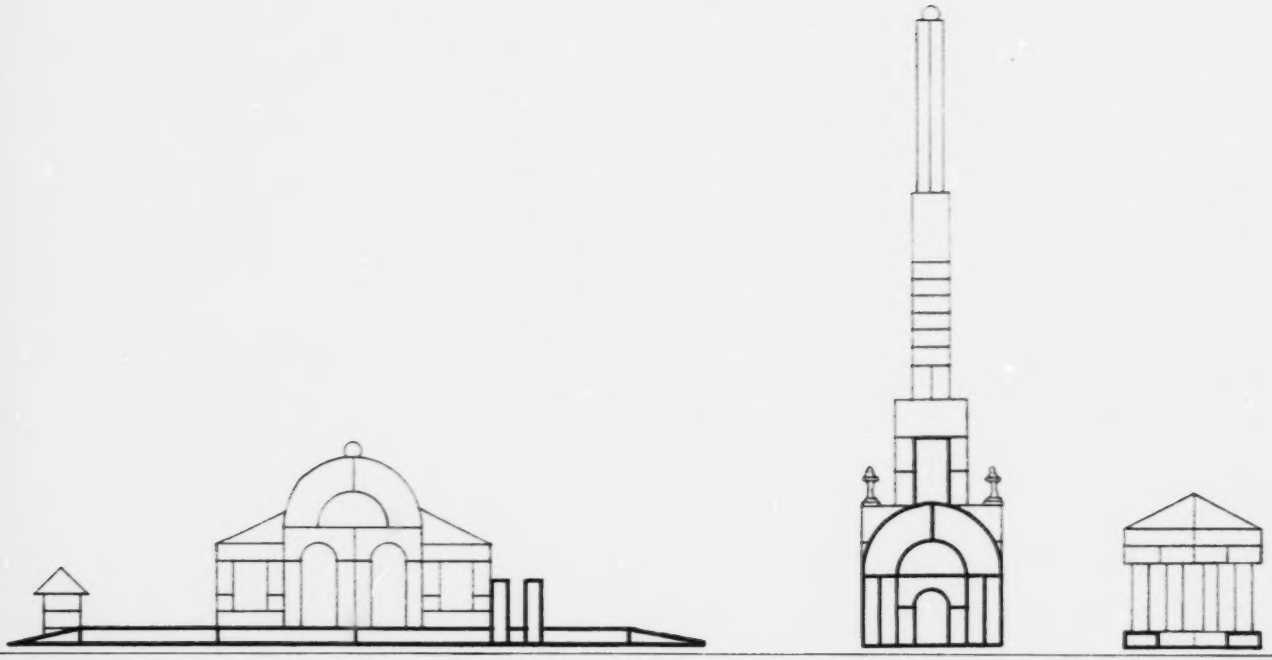

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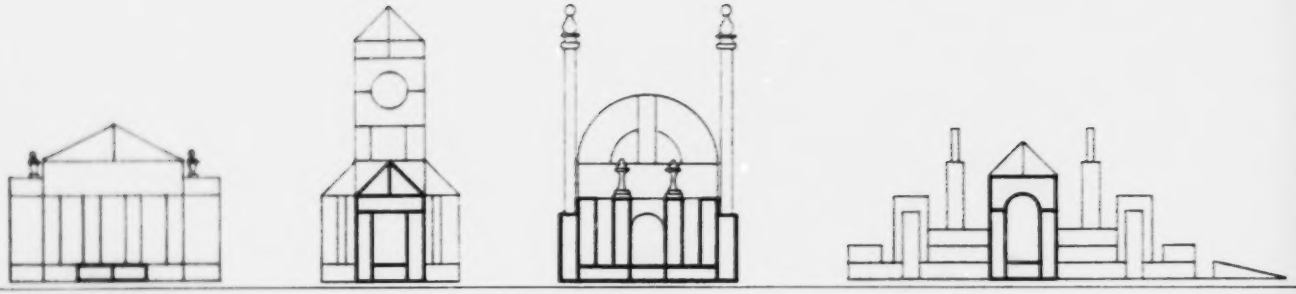
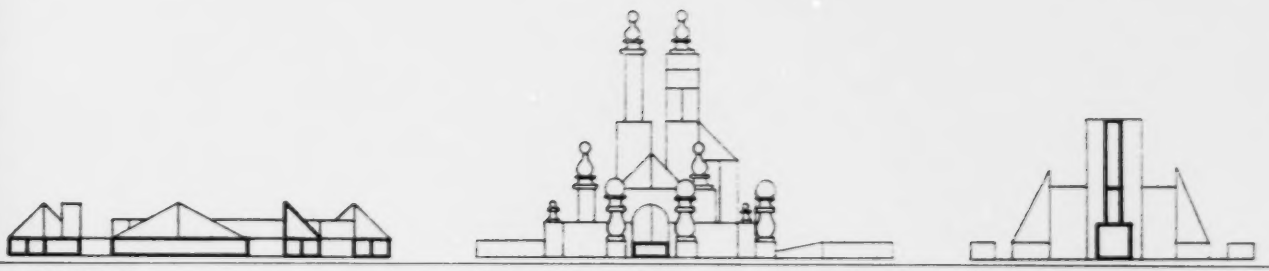
SKYSCRAPER

GREEK TEMPLE



SYNAGOGUE CATHEDRAL MOSQUE CASTLE

To my wife Karen and my sons Jess and Andrew



TOY STORE CITY

THE EMERALD CITY OF OZ

THE CITY OF THE FUTURE

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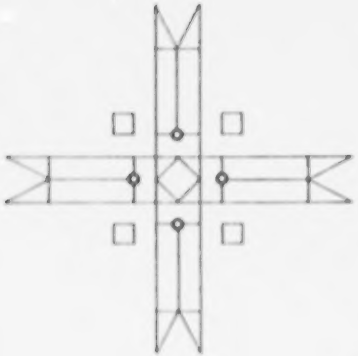

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PREFACE

A celebrated British architect, Sir Edwin Lutyens, is often quoted as having called architecture a game. What he really said, or rather, wrote in a letter, was, "In architecture, Palladio is the game!!" Lutyens greatly admired Andrea Palladio, the great Italian classicist, but the sense of architecture as a kind of play was also implicit in his statement, and it was emphasized by his addition of two boisterous exclamation marks. It was also evident in the building that marked Lutyens's prolific career, which spanned the Victorian and Edwardian periods. His designs, whether the extraordinary Viceroy's Palace in New Delhi, or the elegant British embassy in Washington, D.C., combine gravity with a purposeful playfulness—which perhaps explains why they manage to be impressive without being overpowering.

By the time that Lutyens died in 1944, however, architecture had become a deadly serious business. The mavens of modernism were going to remake the world, and in their earnest, wholesome, healthy utopia there was no room for jokes. Facades resembled an accountant's gridded paper, ornamentation was nonexistent, so was figurative decoration, and color was all but banned from most buildings. Being playful meant leaving air-conditioning ducts exposed under the ceiling, or putting lumpy Henry Moore sculpture in front of buildings that looked like giant shoeboxes.

Fortunately, the fun has come back into architecture. The buildings of postmodernism architects like Robert Venturi, Michael Graves, Thomas Beeby, and the late Charles Moore are no less functional than those of their predecessors—sometimes they even work better—but they are much more lighthearted. Venturi's art museum for the city of Seattle has a jolly, polychrome frieze of ceramic tiles at ground level; Graves is not above incorporating representations of the seven dwarfs in an office building for the Disney corporation; Beeby's new Chicago library has a huge sculpture of a wise owl over the entrance; and Moore's use of architectural whimsy give his buildings an endearing, human quality. Color, ornament, and playfulness have returned to architecture.

That's good, because Les Walker's fine book on playing with blocks gains an entirely new dimension when it is seen in the context of the architecture that surrounds all of us. Obviously playing with building blocks is all about play architecture, but how much richer this experience becomes for the little architect when the big architects are playing too.

When I was a young graduate, fresh out of college, my first job was in the office of Moshe Safdie, who was just completing his modular housing project, Habitat, for Expo 67 in Montreal. Part of my responsibilities involved visiting the building site. Habitat consists of prefabricated concrete boxes that are piled up in a roughly pyramidal fashion. As I climbed the construction ladders that made the building temporarily resemble a southwestern pueblo, I experienced a feeling of a déjà vu. As a boy, like most children I played with building blocks, and Habitat made me feel like a kid again but also, at the same time, like an adult caught in the Brobdingnagian nursery. I couldn't have been the only one who was reminded of childhood by Habitat. Back in Safdie's office there was a model of the housing project that the architects and engineers had used during the design process—it was made out of Lego blocks.

The sense of bigness and littleness—what architects call scale—is a particularly attractive aspect of the building projects illustrated in this book. First, there is a sketch of the "real" building, which is then followed by a suggestion of how it might be translated into block construction. I must admit that looking back on my own block building career, it was castles that were my favorite, and I developed a large inventory of ramps, defensive walls, and turrets that could be combined and recombined into different types of fortresses. Unfortunately, since I've become an architect no one has ever asked me to design a castle. So perhaps it's good that although this book includes one really interesting castle, it also provides designs for everyday buildings like car washes and drive-in restaurants. These also offer the opportunity for the little architect to compare his or her project to the real thing, and to experience the mystery of scale that is such a big part of the architectural game.

It seems to me that a key ingredient of *Block Building for Children* is what happens after the building has been laid out according to the blueprint suggested by the book. One of the delights of traditional wood building blocks, as opposed to the many more complicated construction toys, is their

simplicity. There are no little nuts and bolts to lose, nor an enormous number of different parts—only eleven different blocks here—and, especially, no constraining rules. Once the blueprint has been followed, the fun starts. The little architect is free to change, improvise, expand, or contract the building. This is where block building starts to resemble the process of architectural design. Frank Lloyd Wright, probably America's greatest architect, used to say that his best friend was the eraser in the drafting room and the sledgehammer on the building site. Fortunately, the little architect won't need a sledgehammer, just the flick of a finger.

Games should be played for fun. I grew up with toy trains, lead soldiers, balsa-wood airplanes, and marionettes and was happily spared the indignity of certified educational toys. It is true that building blocks have a long, pedagogical genealogy. The oldest English reference to toy building blocks that I have come across is in Maria and R. L. Edgeworth's *Practical Education*, published in 1798. The pioneering nineteenth-century German educator, Friedrich Froebel included building blocks in the play materials that formed the core of his teaching method for very young children. Building blocks have preserved an innate attraction to children for at least three centuries. They are simply fun. Still, all childhood experience is education of a sort, and I can't help hoping that somewhere a child will come back from a visit to the neighborhood mall, and instead of playing Space Avengers, or whatever is the video game of the week, he or she will start to lay out a better shopping center. Perhaps it will have minarets, or a park in the middle. Maybe it will look like a Greek temple, or The Emerald City of Oz. Wright claimed that playing with toy blocks started him off on his architectural career. Like so many pronouncements of the master this was probably hyperbole, but who knows?

—Witold Rybczynski

INTRODUCTION

This book has been inspired by my oldest son, Jess, my youngest son, Andrew, Caroline Pratt, a most brilliant and innovative educator, and my teaching of architecture in New York.

JESS WALKER

Some of the best times I've had in my life were when I wrote *Housebuilding for Children* and *Carpentry for Children* with my first son, Jess, when he was eight and twelve years old. For those of you who haven't read these books, I used photographs of Jess and his friends and step-by-step drawings to illustrate how to build a series of five small playhouses, a lemonade stand, stilts, a birdhouse, a raft, and many other favorite children's projects. We spent a summer working together on each book, giving me wonderful, vivid memories of Jess and some of his best friends.

When Jess was seventeen, my second child, Andrew, was born. I remember thinking, very early in his life, "will Andrew be as interested in building as Jess was, and will I be lucky enough to find a subject, worthy of a book, to involve Andrew as I had done with Jess?"

ANDREW WALKER

Andrew quickly became one of the most amazing, energetic, interested, busy, wonderful little kids ever. He got into everything in every room in the house. He devised ingenious methods to get to things stored out of his reach and was always working/playing with something. The minute one of his "projects" was cleaned up, he had started two more. He was/is a blur of energy.

On Andrew's third birthday, he received a big set of unit blocks (similar to the set described on page 17-18). For the next year or two, it was a rare time when we could actually walk into his room without having to tiptoe around some sort of city or modern building construction. He often built two or three different block structures a day. When he built one he really liked, he would often play with it for a while, change it, play with it again, and change it again until he finally got bored with it and would start something new. By age five, he had four more block sets to supplement his unit blocks and was a certified Lego (plastic building blocks) maniac. He loved to build.

Not wanting to disturb his creative process or give him preconceived ideas, I tried to stay away from his block building. Then, one evening when I came home from my studio, I found that he and my wife, Karen, had built a most incredible block car wash, modeled after and inspired by one that we often visited. Both of them were having so much fun that I simply had to join in. We rearranged the car wash a bit, added some toy cars and a highway, and within a few minutes, we had an exciting piece of pretend architecture to play with.

Later, I thought about Andrew, would he be intimidated by his mother and father imposing their ideas of architecture on his four year old mind? Would he get disgusted with his inability to make a structure that looked like a "real" building? His childlike constructions were beautiful, and we didn't want to inhibit him in any way.

The next day, Andrew changed the car wash and the following day he changed it again. It didn't look like our car wash any more but it looked like a car wash—and it was his car wash! Just as interesting to me as his ability to change the original structure was his extreme interest the next time we went through a real car wash. He wanted to know the names of all the parts, he checked out the quick-lube section, and carefully watched how it all worked. It occurred to me that he was "practicing" architecture, at least the research and design parts of the profession.

I began to think of a book dealing with children's block building as a beginning book on architecture. It was interesting to me that Andrew was teaching himself about the importance of the flow of people and vehicles through a building by creating block models. I really liked that he had changed and re-worked the original car wash into one that he liked. It was exciting that he was seeing blocks as imaginary structures and playing with them as such.

I decided to build a shopping center with him since he knew about malls and, in fact, loved malls. We started with two major stores, one at each end of his room, and then put

smaller stores and the connecting mall between them. We put in a few entrances, and I gave him a little lesson in shopping center design—that it was important to put the big stores at the end of the mall so that people would walk past the smaller stores, and perhaps shop in them, as they walked to the larger ones. He seemed to enjoy this for a short while but soon realized we had forgotten the food court and the parking lot.

We rearranged everything to squeeze in the food court and then got his toy cars out to make a parking lot. We worked on the design for a while until we felt we couldn't make it much better. I was satisfied the design was finished, and I went out to cut the grass. But he was "bored" with a "finished" design and kept changing and playing with it so that by the time I had cut the lawn, he had built a completely new shopping center with movie theaters, auto stores, kiddie rides, drive-through restaurants, and banks, all the trimmings. The shopping center was an on-going project for about a week. Then it was time to go on to another project. But I was inspired by this. I had sparked his interest by building with him a very straightforward design, and he had taken the bait and gone forward to build many more related designs and playing unimaginable games by himself.

He was so interested in building and so good at programming a building design from his own five-year-old perspective that I knew we would make a wonderful team putting this book together.

CAROLINE PRATT

As I researched to see what the future might hold for a book on block building, I very quickly, discovered that the person who was most influential with the use of blocks in the education of young children was Caroline Pratt.

Beginning her work in New York City at the beginning of the twentieth century, Caroline Pratt developed and practiced her own innovative philosophy of education by providing her students with materials that, as she explained in her book, *I Learn From Children*, (see Bibliography), were "so flexible, so adaptable, that children could use them without guidance or control. I wanted to see them build a world; I wanted to see them re-create on their own level the life about them, in which they were too little to be participants, in which they were always spectators." She developed a set of blocks she called "the Unit System of Building Blocks" or, as we know them today, unit blocks. These blocks, based on a proportion of 1:2:4 have become the standard block system used in many homes with children and most nursery schools, today.

I Learn From Children is required reading for any parent or educator interested in the value of blocks as an educational tool. The impact of Caroline Pratt on the educational world of young children will last for a very long time.

MY TEACHING

During my twenty years of teaching college architecture, I encountered one troublesome, universally difficult problem. It was that poor students and excellent students alike often had a difficult time getting started with a design. After many years of experimentation, I solved the problem by having each student, very early on in the project, build a cardboard model of his/her design and then present their design to the class using this model as their primary tool. Many of the models were crude, unimaginative, and overly simple but nevertheless, they were a start! From that point on, for the next few weeks, the students were encouraged to reconfigure their model, after hearing criticism from me and the rest of the class, to better fit their site and program, to improve their craftsmanship, to make the best design they could. They learned from each other and began noticing the built environment around them in a different way. Soon a personal, imaginative, sometimes strange, always original, well-crafted design would emerge from most of the students. Confidence and enthusiasm would build and often a student would experience the thrill of having his or her design stretch to explore new possibilities for a particular building type. Models, and the willingness to chop them up and change them very early in the design process, were the key.

My goal then, with this book, would be to provide very simple, step-by-step plans, accompanied by photographs, for young children to build a wide variety of the most popular

building types ever constructed. I would see this as a way to get a child to build structures he or she might not have a clue as to how to begin and as a way to entice the parent or teacher on to the floor. I would also see the structures, built according to my plans, as a first step, a start, in the construction of that building type. As with my college architecture students, the next step would be to encourage the child to add to it, subtract from it, reconfigure it, make it a new more personal design, play with it, change it again, play with it again, and so on. And what better tool could be used for this than unit blocks.

The ideas in this book are meant to fit within the curriculums of any early childhood education schools, where young children learn by building and expressing, with unit blocks, what they observe during field trips or just everyday life. My visit and discussions with Dr. Harriet Cuffaro and Sal Vasallaro at the Bank Street College of Education helped me understand that building structures, as an architect would see them, as I've presented in this book, would begin to interest children at about age seven. They also agreed with me that my experience with my son Andrew was special and that most young children under age seven could benefit greatly from this book with the proper parent or teacher guidance.

It seems to me that there are two ways to play with blocks. First is the way that Caroline Pratt has professed, which is now being fully realized in many schools where children learn and build from their real-life experiences. The second is to play/build following directions, with a parent or teacher guide, to understand how typical building types are built, as I've illustrated in this book.

To me, both these methods are compatible and valuable. My experience has been that children of all ages can learn and have a great time building block structures from their dreams or by carefully constructing prototypical or historical building types from plans. Anyone who has played with the small plastic building blocks called Lego will know what I mean. It is equally exciting and rewarding to build the Lego structure according to its plans as it is in building your own design from the same pieces.

I would think that if teachers and parents played a more active role in block building, they might stimulate children into this field of architectural play/learning and might see some amazing results. For example, when he was in preschool learning about other countries, Andrew could have built a block temple when studying about Greece, a cathedral when learning about France or England, and a shopping center when studying suburban America. Simple lessons of religion, social history, and economy could have been introduced and, of course, lessons of building and architecture would be obvious.

Educators have known since Caroline Pratt that blocks can be a major contributor to early childhood curriculums. Essays by experts in the field of early childhood education on the subjects of Art, Science, Math, Social Studies, and Drama are included in *The Block Book*, edited by Elisabeth S. Hirsch (see Bibliography). There is a wonderful history of blocks, including Frank Lloyd Wright's experience with Froebel Blocks (the first block set that was used for educational purposes) and the Marie Montessori block system, which she developed to teach mathematics, in *The Complete Block Book* by Eugene F. Provenzo, Jr., and Arlene Brett (see Bibliography). Children's museums such as the Please Touch Museum in Philadelphia have devoted space to blocks showing how block sets have evolved through time and what a wonderful educational tool they are today (see Appendix).

My contribution to all this is to try to present block play in such an exciting, interesting, and tempting fashion that we all just can't wait to get on the floor and start building.

LESTER WALKER
Woodstock, New York

Opposite page: The largest block castle ever built. Creative Playthings Toy Store, New York City. Built in 1970 by the author, Lester Walker, and Robert Mangurian of Studio Works, architects.

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1 SETTING UP FOR BLOCK PLAY

The next ten pages give instructions for buying blocks, setting up a block building place, and collecting accessories you may want to use with your blocks.

Your block set should contain all the unit blocks necessary to build each project in this book and the accessories can usually be chosen from the toys around your house. But, the handmade accessories that are suggested will require some help from parents or teachers. Any local lumberyard or home center will have the dowels and wood turnings suggested on page 26. These accessories are a most important supplement to your block set and will add a touch of realism, fun, or decoration to each project.

BUYING YOUR BLOCKS

All the projects in this book are built exclusively with the standard unit blocks system developed by Caroline Pratt in 1915 and discussed in her book, *I Learn From Children* (see Bibliography). Their simple shapes and mathematical proportions have made them overwhelming favorites in the home and the school.

The following is a list of the most popular unit blocks and the amount needed for all the projects in this book.

You can buy a set of blocks specifically designed by the author to build all the projects in this book from The Overlook Press, 2568 Route 212, Woodstock, NY 12498. Please write for information. If you already have a unit block set but you need to add blocks to make the complete set listed below, you will find that they are readily available through most children's catalog houses and toy stores (see Appendix).

NUMBER	BLOCK SHAPE	NAME	SIZE	AMOUNT NEEDED FOR THIS BOOK
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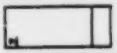
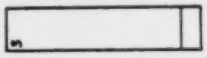
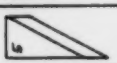
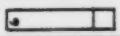
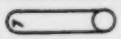
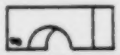
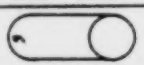
2		UNIT	2 3/4" x 5 1/2" x 1 3/8"	8
3		DOUBLE UNIT	2 3/4" x 11" x 1 3/8"	8
4		HALF TRIANGLE	2 3/4" x 2 3/4" x 1 3/8"	8
5		TRIANGLE	2 3/4" x 5 1/2" x 1 3/8"	8
6		PILLAR	1 [illegible]" x 5 1/2" x 1 3/8"	8
7		HALF CYLINDER	1 3/8" DIAMETER x 5 1/2"	4
8		ARCH	2 3/4" x 5 1/2" x 1 3/8"	2
9		CYLINDER	2 3/4" DIAMETER x 5 1/2"	2
10		CURVE	2 3/4" x 5 1/2" RADIUS x 1 3/8"	4
11		RAMP	2 3/4" x 5 1/2" x 1 3/8"	2

FOR EASY IDENTIFICATION, EACH BLOCK HAS ITS NUMBER LABELED ON IT ON DRAWINGS THROUGHOUT THE BOOK.

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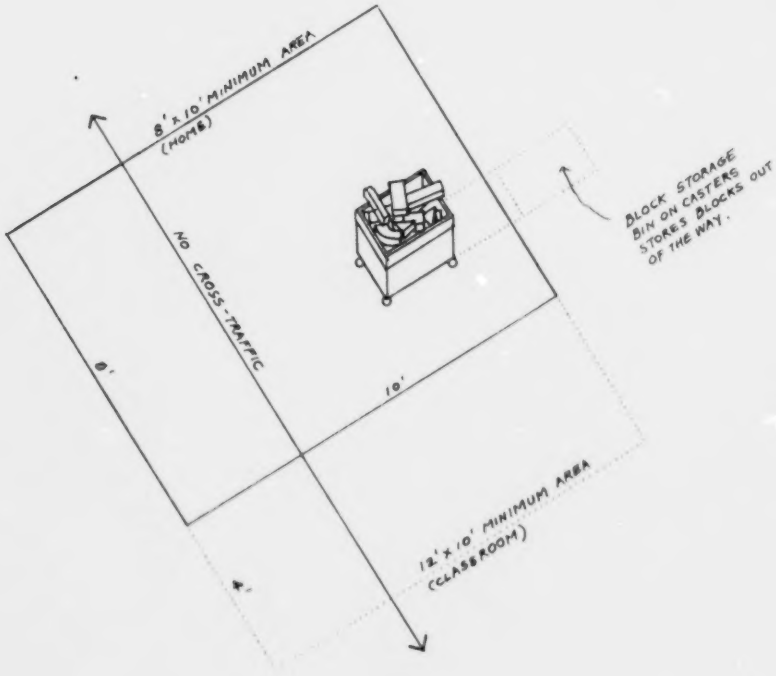
SETTING UP

Some care must be taken in setting up a room for playing with blocks. Furniture must be pushed back to make a block-building area that is large enough to accommodate everyone who wants to build. In the home, an uncluttered, clear area of eight feet by ten feet is a minimum size for one or two people and a block storage bin. In the classroom, an area of ten feet by twelve feet can accommodate five to seven people building together or in groups. In both cases, the area must be free of cross-traffic, well lit, and away from all drafts.

The best surface for block building is a clean, level, wood or tile floor. While no-pile carpets provide a softer more comfortable surface, they do not allow the block construction to stand as firmly as does wood or tile. If the noise of a crashing castle is a consideration, carpet is then best.

The best block storage unit is a wheeled bin, or bins, that can bring blocks from an out-of-the-way storage place to the heart of the block building area. The advantage of this system over shelf-storage units is that it makes for easy, fast cleanup, as well as its portability. This storage unit is a must. Look for one from the block company or toy store; or a handy person can make one from a sturdy, well-braced wooden box with four casters bolted to the bottom.



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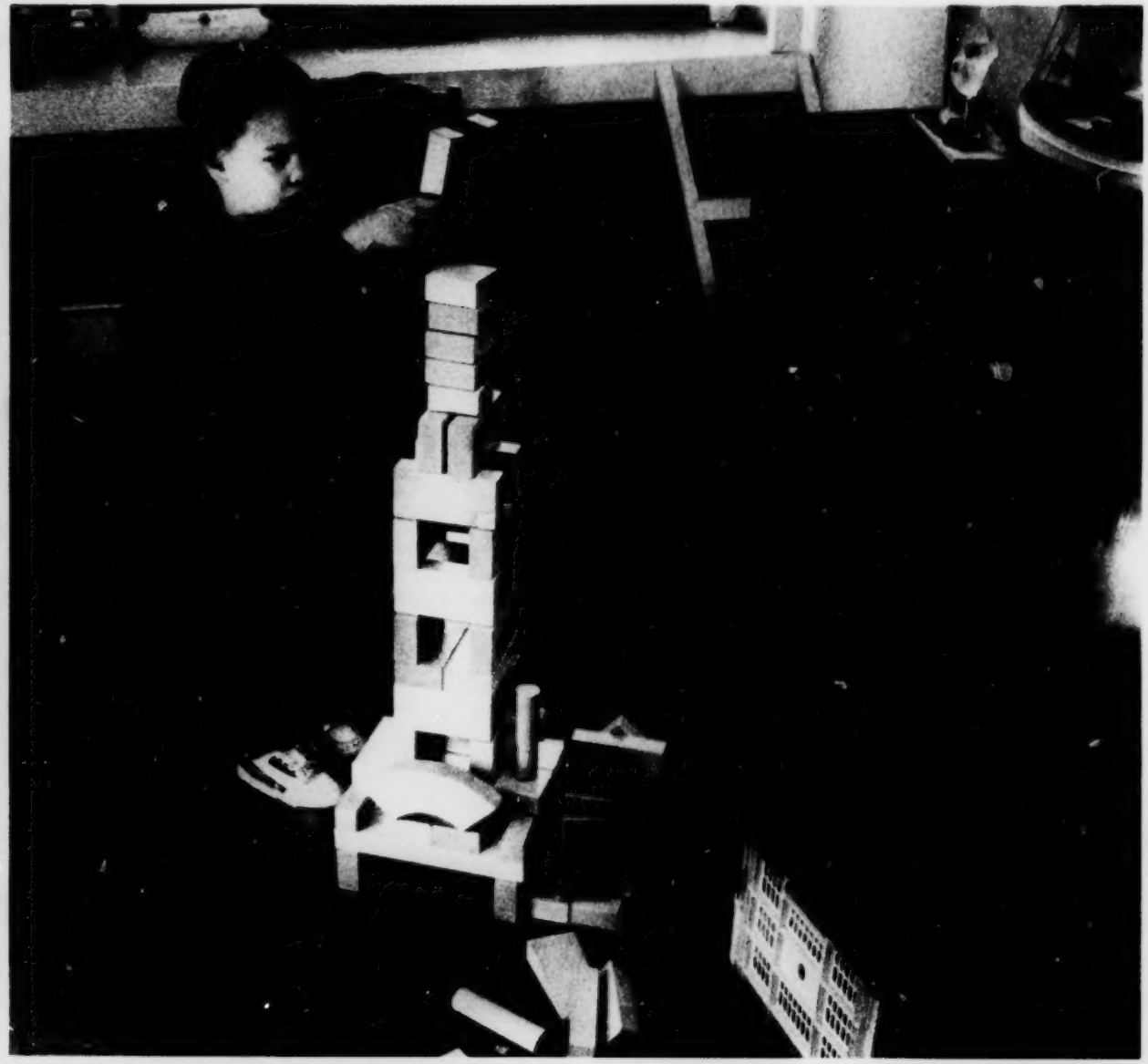

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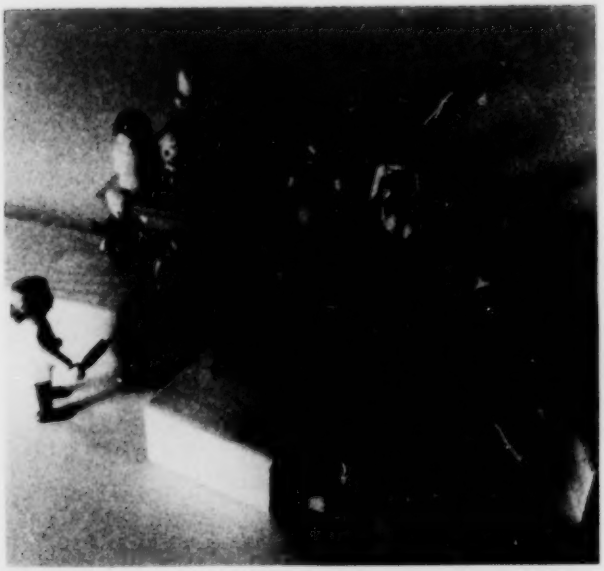
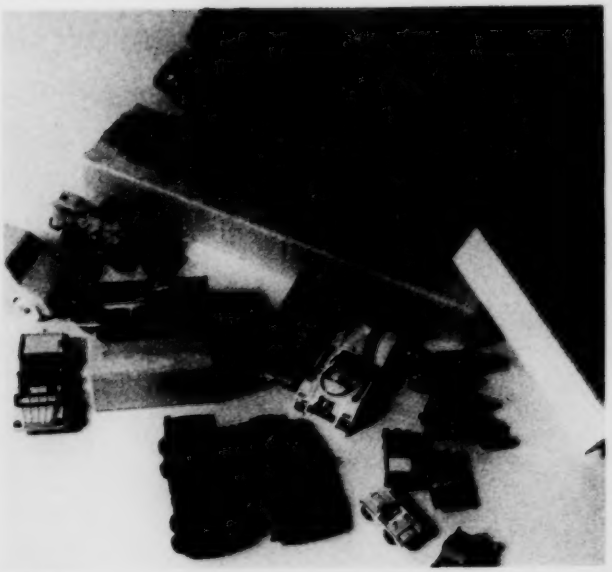
TOY ACCESSORIES



PEOPLE

Toy people at any scale can be used for almost any block-building project.



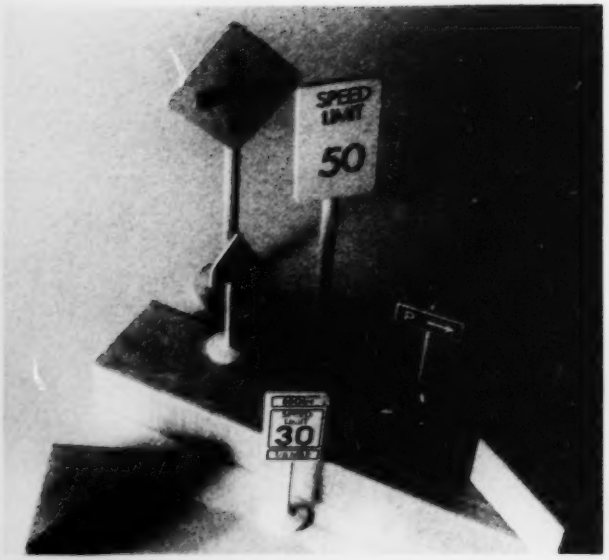
CARS

The best toy cars are the die-cast metal ones, about 2½" long. They give a good scale to city, highway, and parking projects.

If you look at the unit block set as the principal toy in the playroom, all other toys can be seen as accessories to the blocks. The beauty of an abstract block construction is that it can be imagined to be almost anything. Once the decision is made as to what it is, the toy accessories can be added and the construction can come to life. Toy animals help create a block barnyard and toy cars can make a block highway.

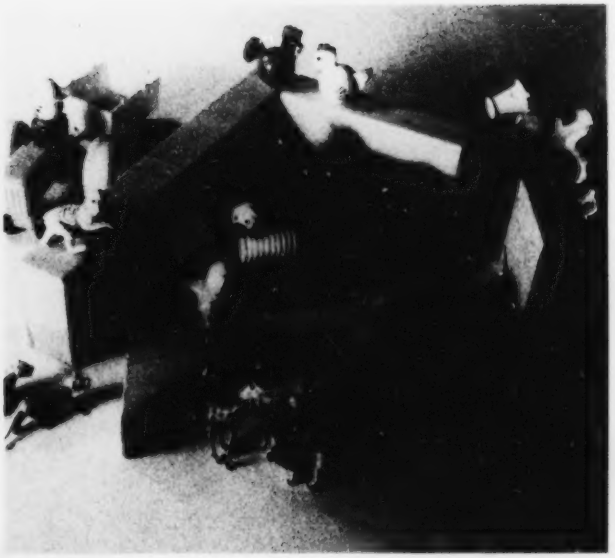
As they bring a block construction to life, toy accessories also give a scale to the project, making it seem large or small depending on the size of the toy. For example, a small micro-car, when placed next to a block construction, might make it look like a huge industrial building, but when a big metal truck is used, the same block construction might look like a small garage.

Shown on this page and on the following three pages are eight of our favorite types of toy accessories.



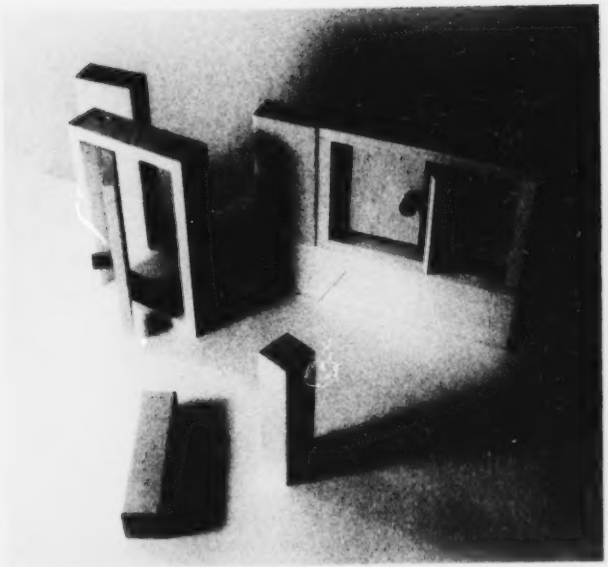
TRAFFIC SIGNS

All highway related projects need traffic signs to direct vehicles. These accessories are available through catalogs or at most toy stores.



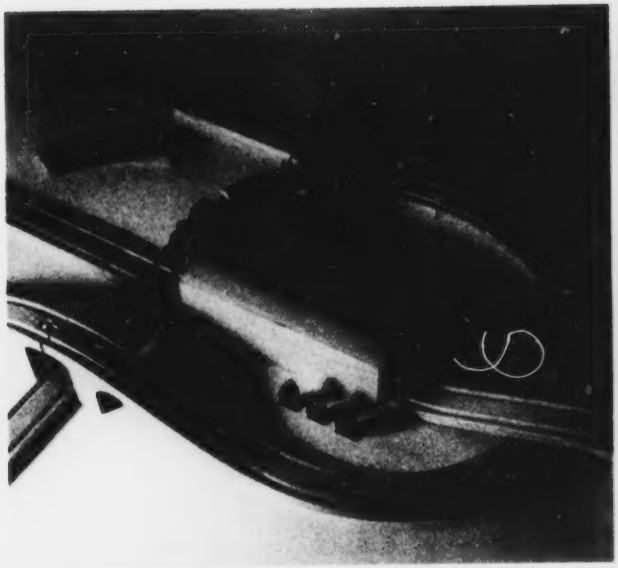
ANIMALS

Toy animals can magically inspire block projects like zoos and farms.



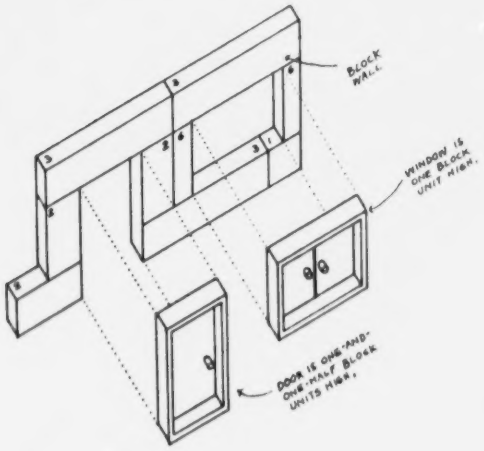
MODULAR WINDOWS AND DOORS

These accessories are made to fit with the unit block dimensions and are the same scale as dollhouses.



INTERCONNECTING TRAIN TRACKS WITH TRAINS

A wonderful, popular, wooden toy that is both esthetically and size compatible with the unit block system.



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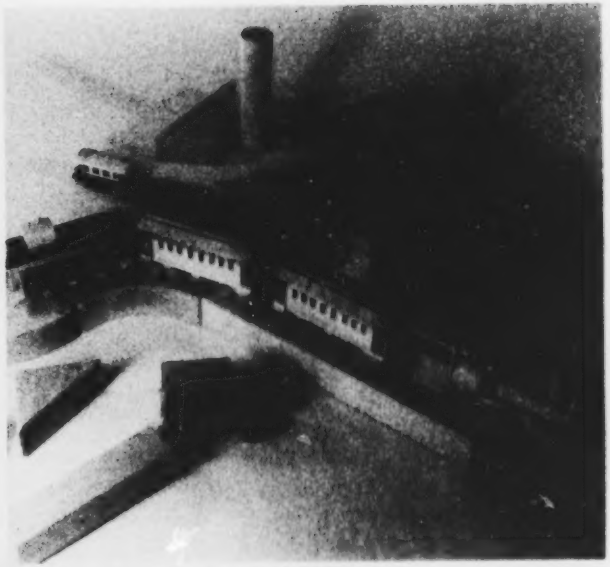
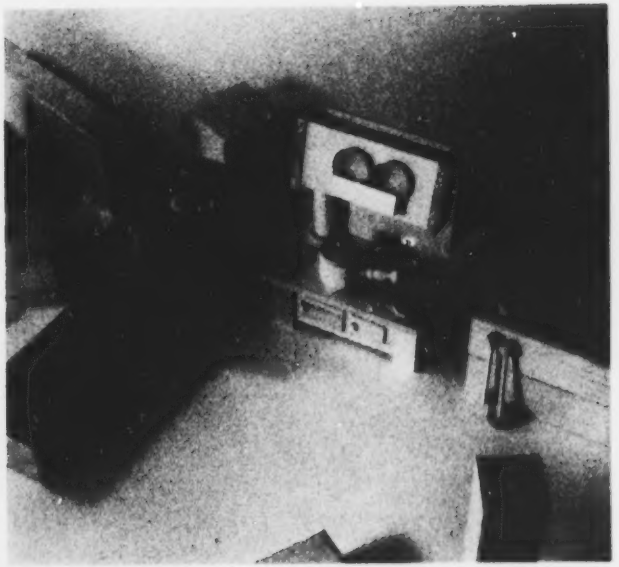


BOATS, TRAINS AND PLANES

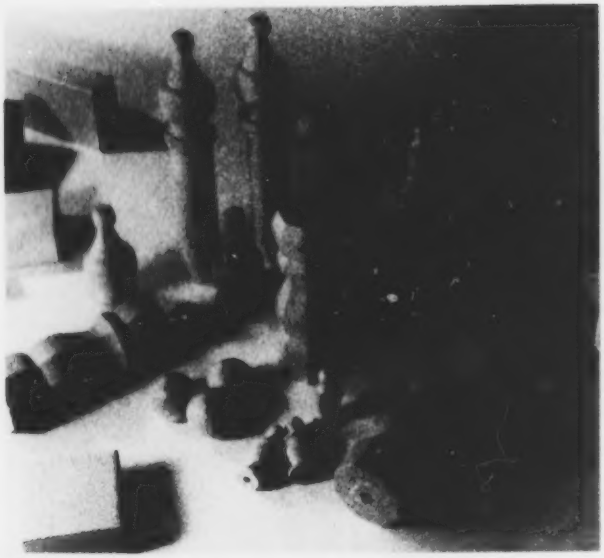
The romance of public transportation projects can be made real with these accessories. A dock cannot truly be a dock without a boat.



DOLL FURNITURE

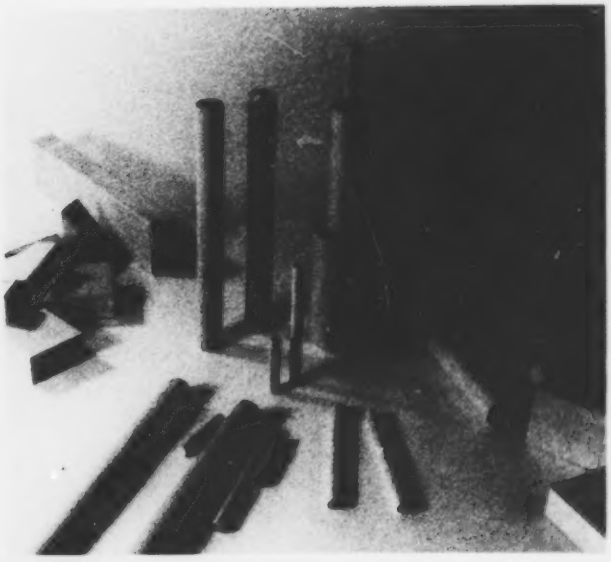
The scale of unit blocks is very compatible with the 1″ = 1′-0″ scale of a dollhouse. A block room can come to life with a simple piece of doll furniture.

HANDMADE ACCESSORIES



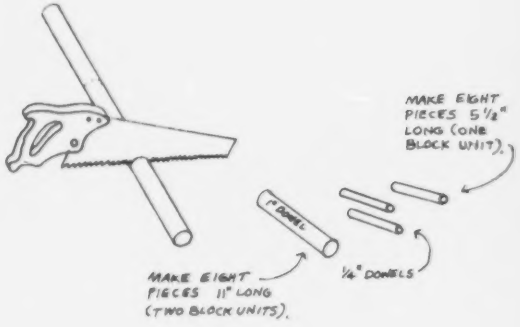
TURNINGS

Store-bought wooden bed legs, railing balusters, cabinet door handles, and newel post finials make accessories that can help change a relatively dull, uninspired block construction into an exotic architectural masterpiece. These accessories are a must for any block set.



DOWELS

Simple store-bought dowels can be cut into many narrow cylinders to supplement your block set.



Anyone who can use a few hand tools can make some wonderful inexpensive wooden block set accessories. Shown above are two of our favorite types of handmade accessories.

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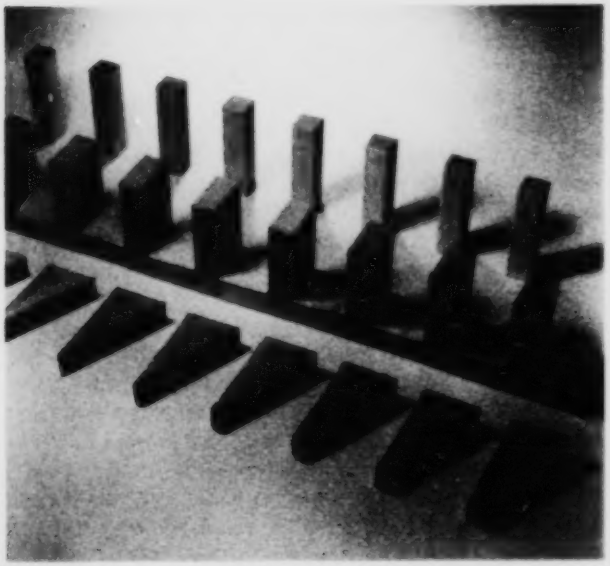
2 BEGINNING BLOCK PLAY

Block building as a means of discovering architecture can be as exciting as play can get, but how to start when confronted with a pile of blocks?

The next fourteen pages describe five basic block-building techniques that can be used to design almost anything. These techniques are meant to get you started, to give a feel for block building, to broaden your approach to block play, and to show how much fun it can be. The ideas that are presented are loosely based on a 1933 essay by Harriet M. Johnson called "The Art of Block Building." Ms. Johnson, founder and director of the City and Country School in New York City, studied young children playing with unit blocks and found that there are several common basic structures that children, when left alone, will naturally build. Young children (ages 3 to 5) tended to make rows and towers and children ages 5 to 6 liked the more complex structures Ms. Johnson called "bridges" and "enclosures." We have elaborated on each of her ideas and offered them as techniques that a block builder of any age would want to master.

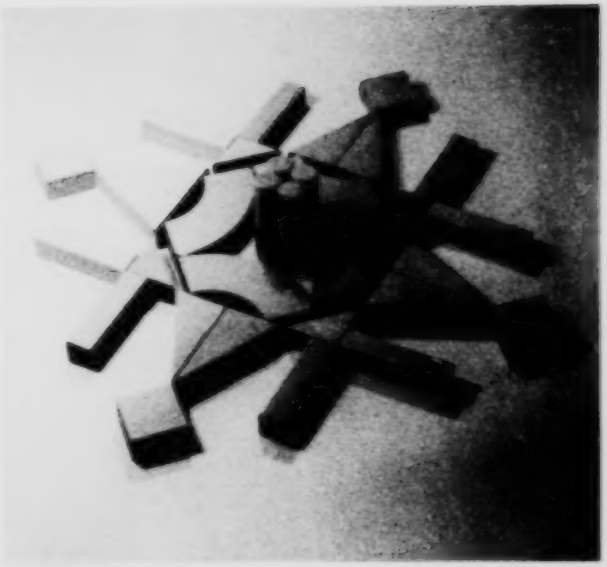
Spend some time with each of the techniques, first by reading about it and understanding it, then by building the example shown, and finally by building a structure of your own.

BASIC BLOCK BUILDING TECHNIQUES



ROWS

A row is created by a repetition of blocks in a line along the floor. Rows are usually one of the earliest constructions built by children.

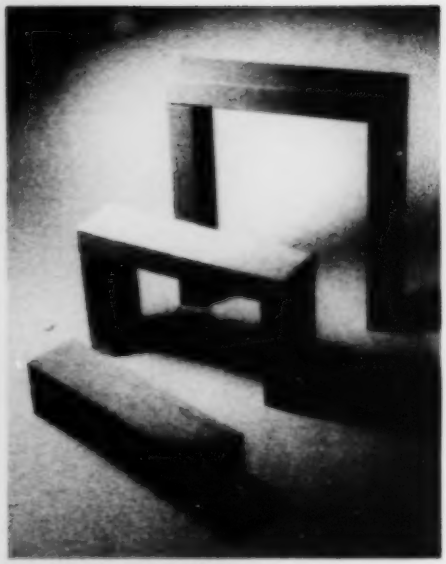


PATTERNS

A pattern is created by arranging the blocks in a primarily two-dimensional, balanced, decorative composition. These constructions can be most abstract and most unpredictable. Young artists and mathematicians will flourish practicing this technique.

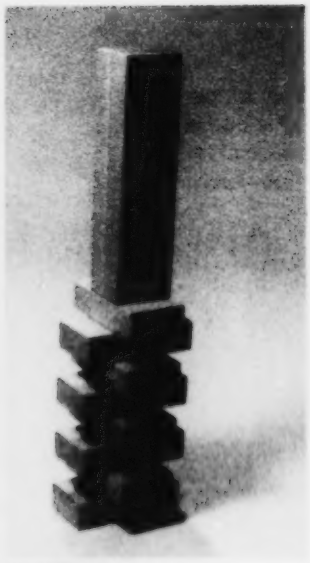
This chapter is designed to show the five basic block-building techniques that can be used to produce any block structure. Each technique is introduced here as an abstract project to be set up, played with, and discussed by a parent or teacher and child. Each project is designed to introduce a technique and show how infinite the possibilities are to expand and explore it. A framework is created, a building idea is described—it is left to the block builder to see where it leads.

Projects elaborating each of these five techniques are shown on the following twelve pages. It is suggested that each of them be fully investigated before any of the realistic projects beginning on page 45 are attempted. Basic block-building technique is important and will help the reader understand what a wonderful art medium unit blocks can be.



COLUMNS AND BEAMS

A beam is a structural member that supports a heavy load like a wall, a roof, or a road. Columns are vertical posts that usually support the beams. Thousands of years ago, this simple building procedure was discovered, and with it, the man-made environment began. Young engineers will flourish practicing this technique.



TOWERS

A tower is created by a repetition of blocks one on top of another up from the floor. Usually the building of a tower turns into a game to see who can build one the tallest without having it tip over.

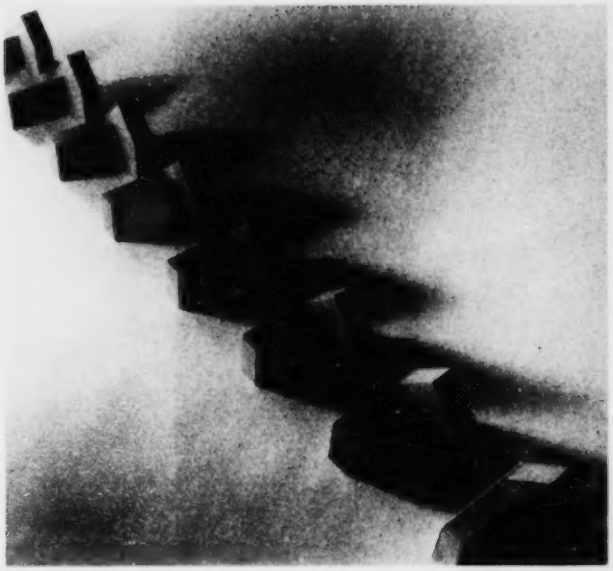
SPACES

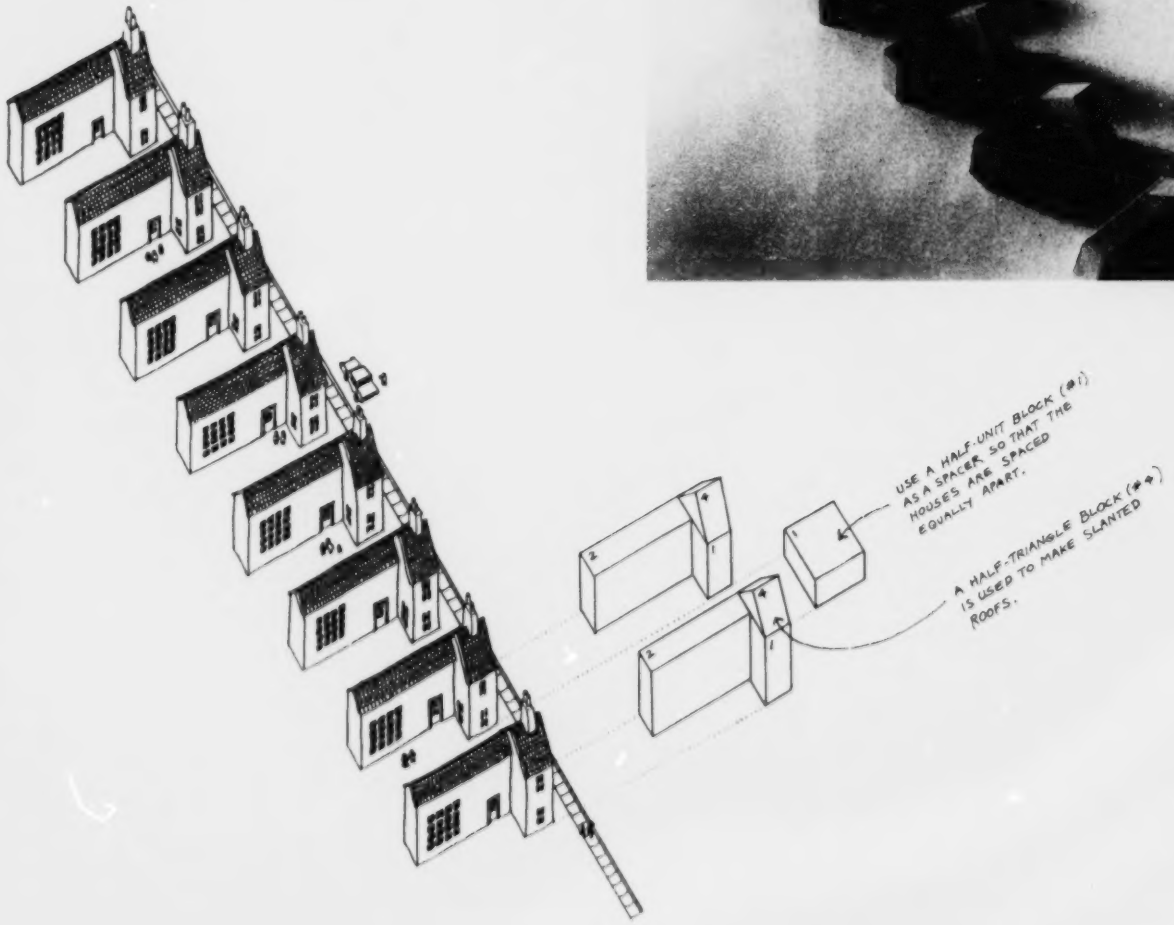
A space, or room, is created by arranging the blocks to form an enclosure. This idea can be wildly creative with constructions ranging from realistic "dream" houses to abstract sculptures. Young architects and artists will love practicing this technique.

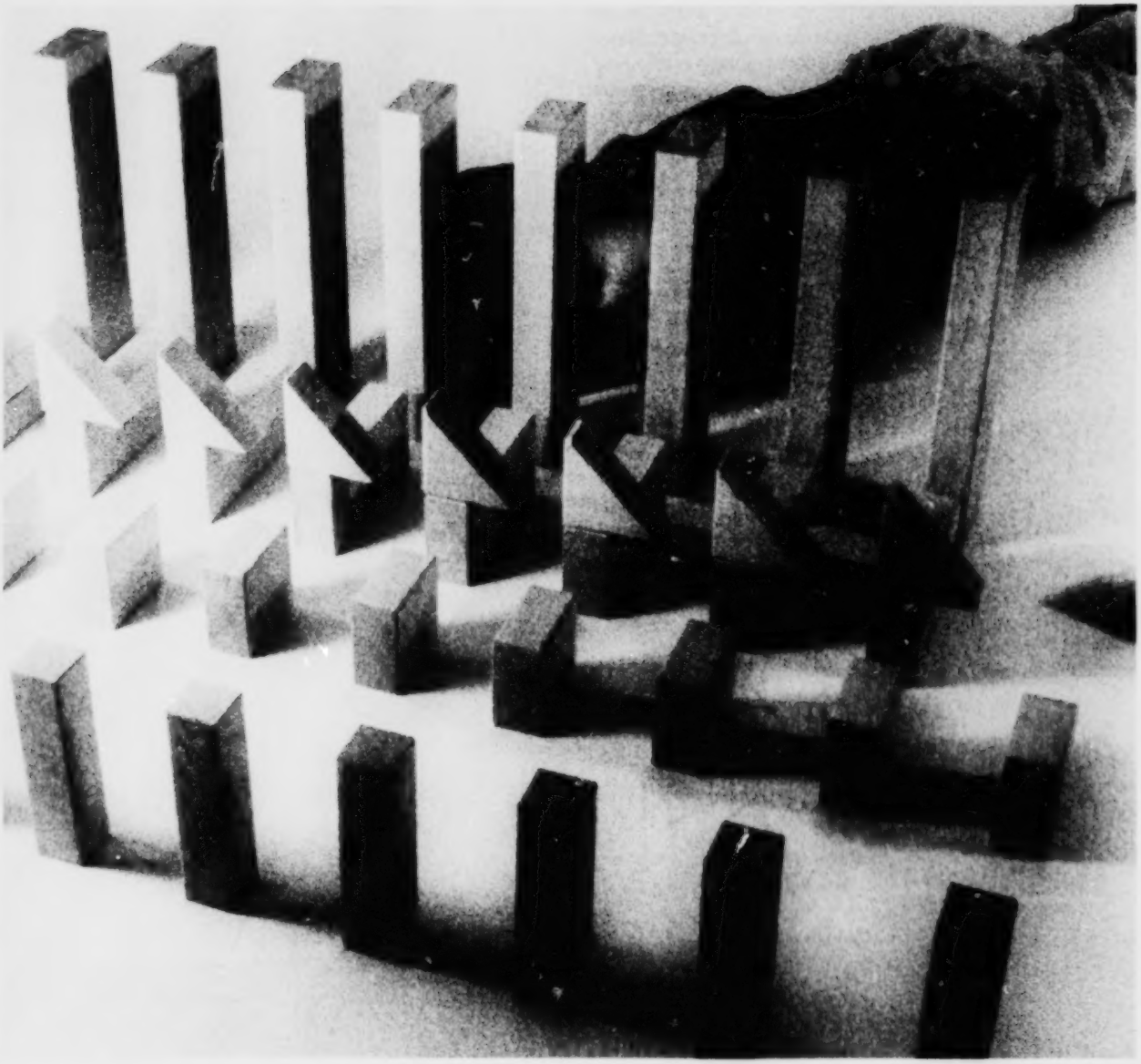
ROWS

Imagine a row of houses, all alike, equally spaced along a street and sidewalk.

Begin this project by designing and building a very simple house using one to three blocks. Then repeat this house design, using the same blocks, in a row along the floor. Car and people accessories will bring life to your new block community.

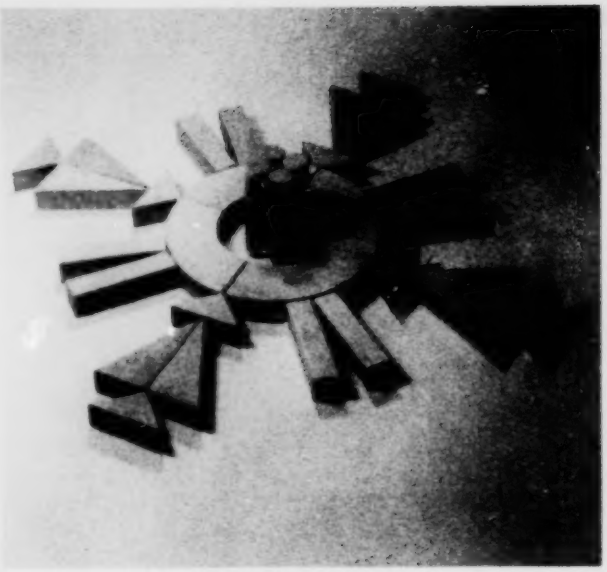


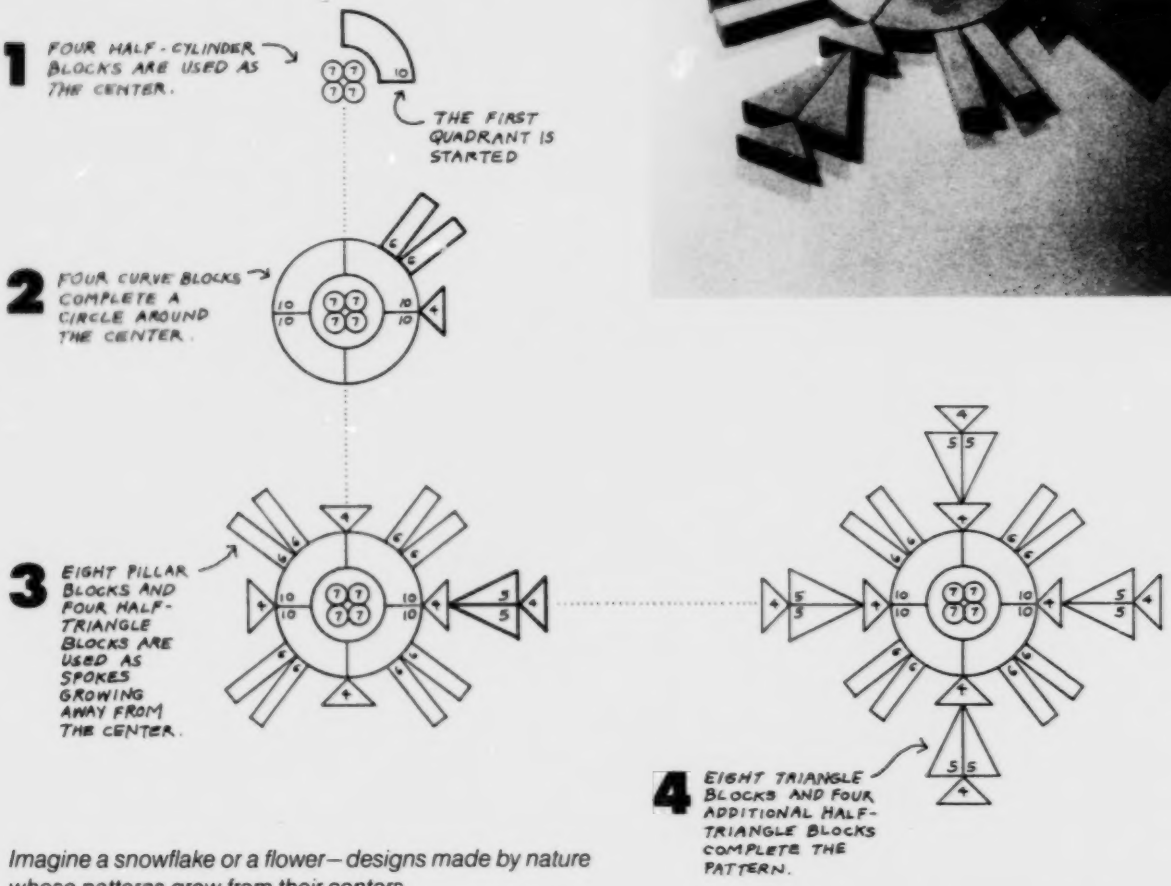

USE A HALF-UNIT BLOCK (#1) AS A SPACER SO THAT THE HOUSES ARE SPACED EQUALLY APART.
A HALF-TRIANGLE BLOCK (#4) IS USED TO MAKE SLANTED ROOFS.



PATTERNS

This project is to create a pattern by beginning with a center and allowing a design to develop by adding blocks out from the center, keeping each quadrant of the design equal. Any block(s) can be chosen for a center and any block(s) can be used to add to the pattern around the center. It's just like doodling, only you're using blocks instead of a pencil and paper.




1
FOUR HALF-CYLINDER BLOCKS ARE USED AS THE CENTER.
THE FIRST QUADRANT IS STARTED
2
FOUR CURVE BLOCKS COMPLETE A CIRCLE AROUND THE CENTER.
3
EIGHT PILLAR BLOCKS AND FOUR HALF-TRIANGLE BLOCKS ARE USED AS SPOKES GROWING AWAY FROM THE CENTER.
4
EIGHT TRIANGLE BLOCKS AND FOUR ADDITIONAL HALF-TRIANGLE BLOCKS COMPLETE THE PATTERN.

Imagine a snowflake or a flower—designs made by nature whose patterns grew from their centers.

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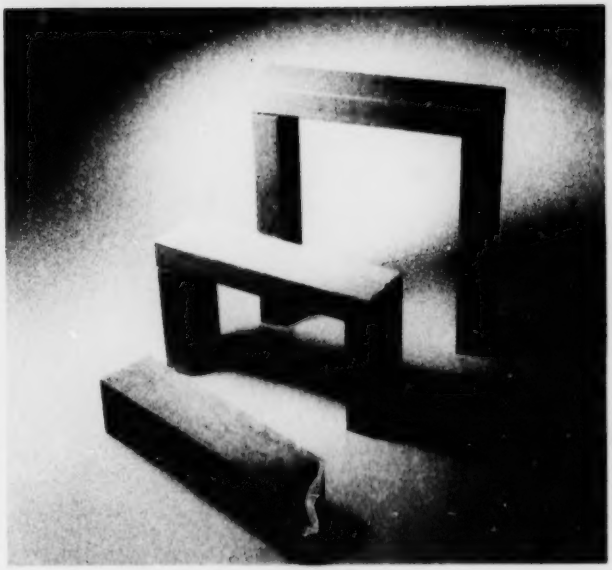
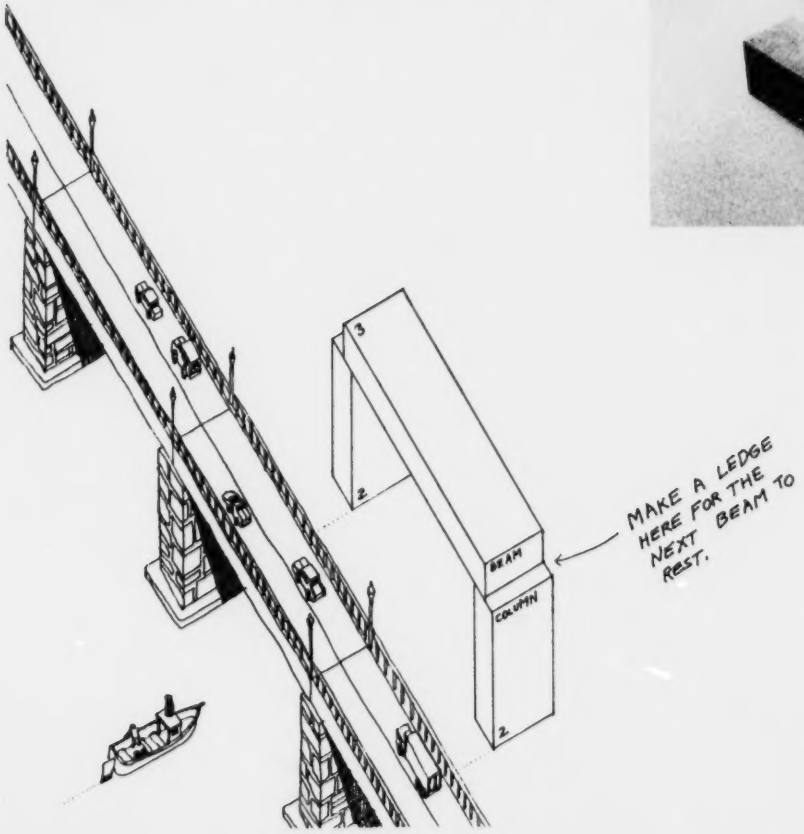
COLUMNS AND BEAMS

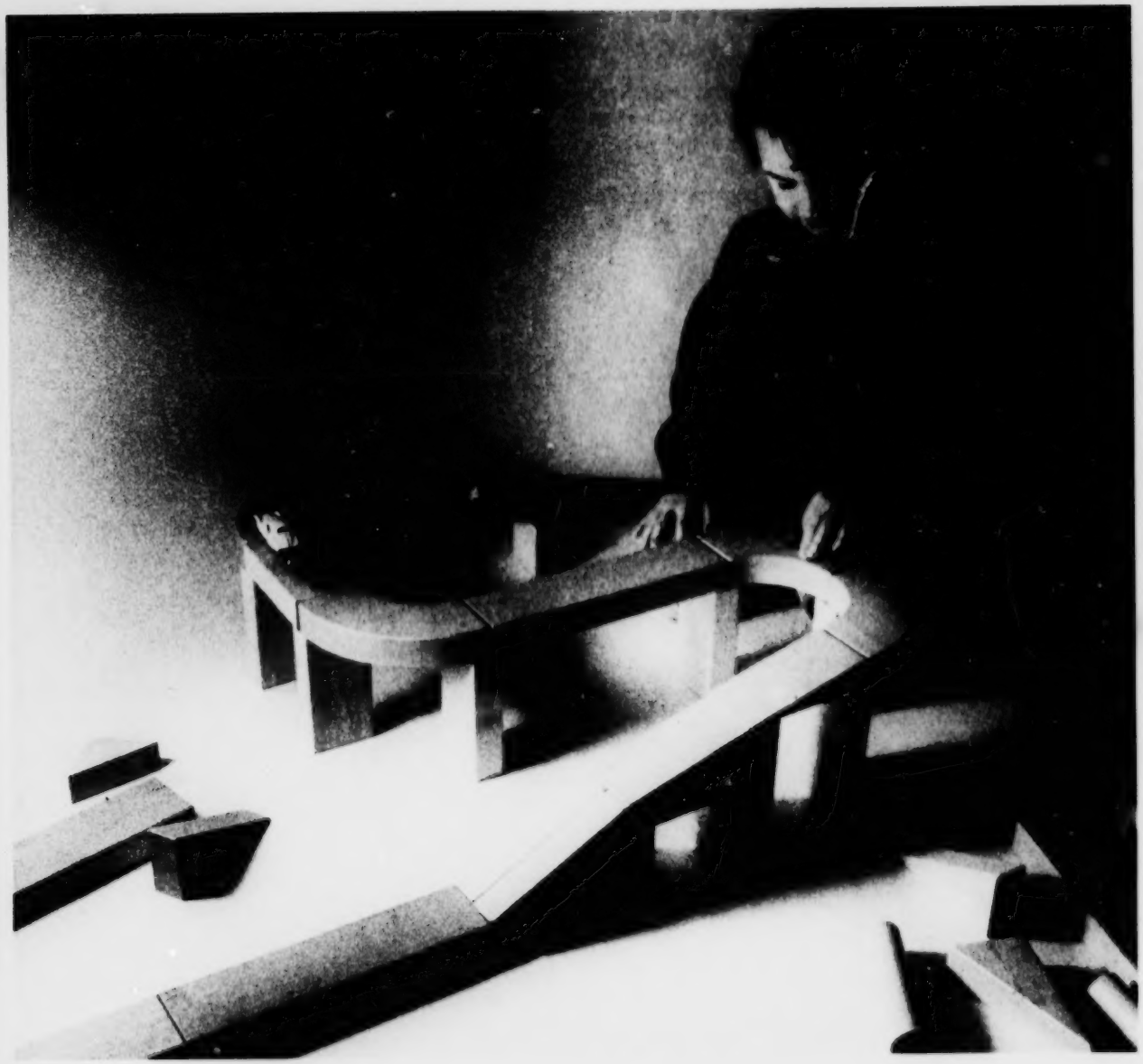
Imagine a simple bridge spanning a river. Columns supporting beams – the most basic engineering concept used in practically every structure ever built, including our bridge.



This is the easiest, most straightforward of the five block-building projects in this chapter. Begin by spacing out the column blocks, then add the beam blocks as you go. You can weave your bridge all around your room or just build a simple one on a table.

Plans to build a more elaborate bridge begin on page 92.



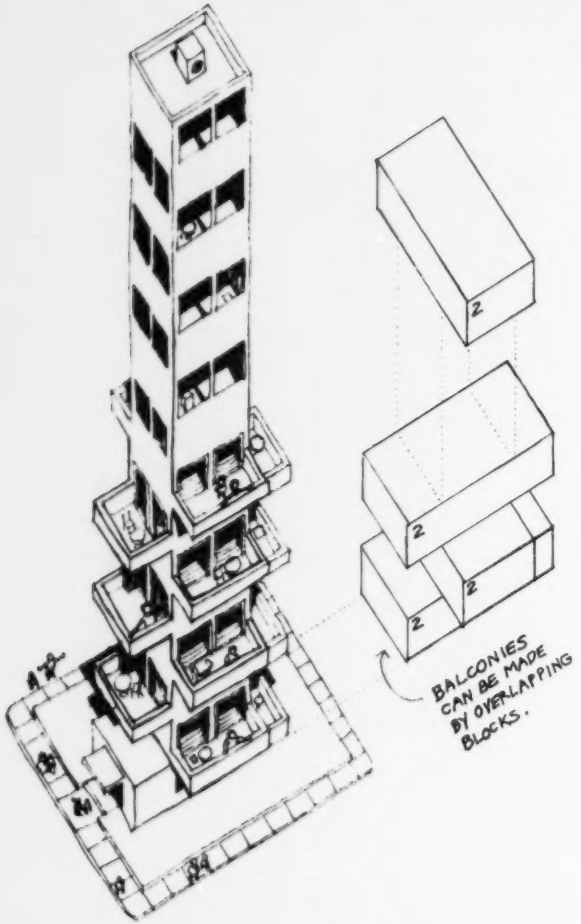


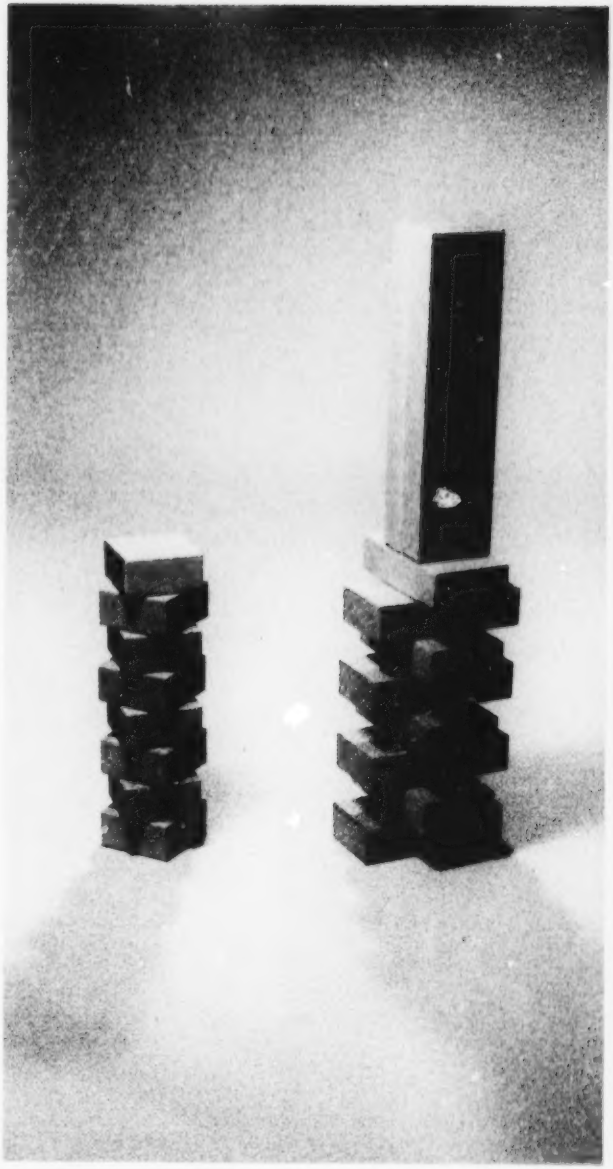
TOWERS

Imagine a high-rise tower built up tall because it is in a large city, where land is very expensive.

The easiest and most fun method to building this project is to simply stack blocks, one on top of another, until your tower gets to the point where it might tip over. You may want to make a few towers and pretend they are a city.

Plans to build a more elaborate tower begin on page 104.

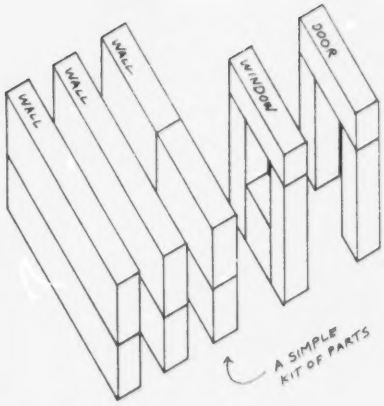


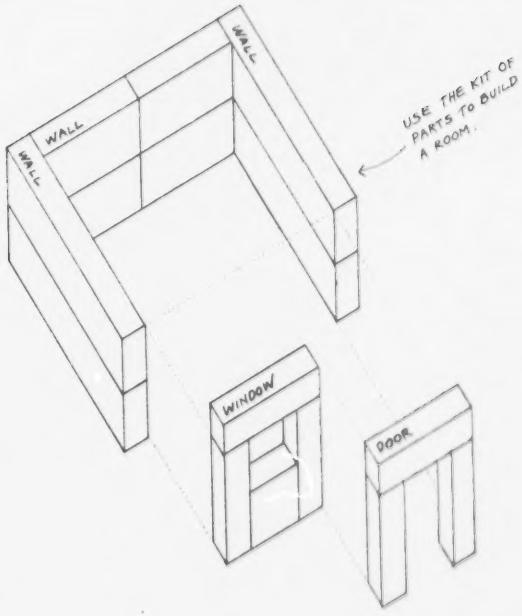


SPACES

Begin your project with a simple kit of parts, like the one shown below, and build a room. As you gain experience, you will find that you can add parts to your kit so that you can add more rooms to your building. You may even want to build a complete multi-roomed structure with this building system.

Dollhouse accessories can bring this block construction to life.

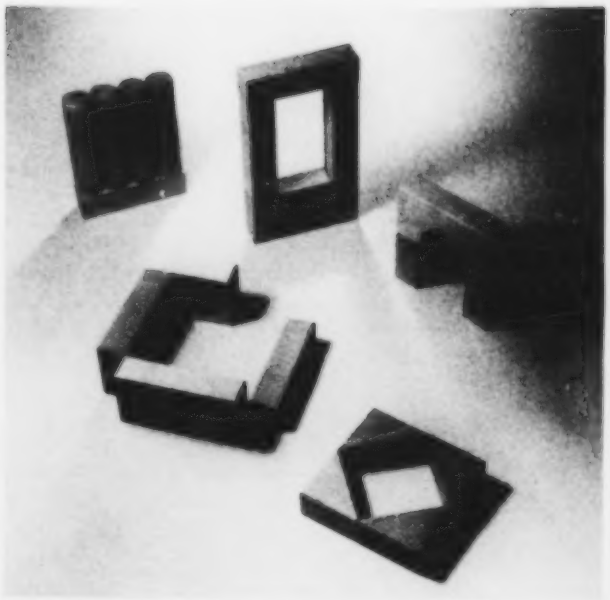




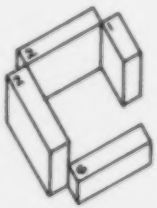
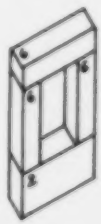
Imagine a space or room made with a "kit of parts" including walls, doors, and windows which have been pre-made and brought to the building site and assembled into a building.

Below is a more complex kit of parts using the walls, windows, and door parts that were discussed on the previous page. Construct a simple building with these parts, then add a few rooms, play with it, then rearrange the parts into a completely new and different design that you have imagined. When you use these parts to build your favorite kind of building, you are practicing architectural design. Congratulations!

Please note that our kit does not include roof parts because they would get in the way when we wanted to play inside the design. Also, we have not included floor parts in our kit because we are using the block building surface as our floor.



KIT OF PARTS

SMALL ROOM PART MADE WITH FOUR HALF-TRIANGLE BLOCKS	TEXTURED WALL PART MADE WITH FOUR HALF-CYLINDER PARTS	ROOM PART CREATED WITH FOUR BLOCKS	ARCHED DOORWAY PART MADE WITH TWO POST BLOCKS AND AN ARCH BLOCK	WINDOW PART MADE WITH A BLOCK FRAME
				

3 EIGHTEEN PROJECTS

The next 118 pages are devoted to eighteen block building projects representing traditional building types from around the world.

A brief history starts each project, then, during construction, you will learn something basic about its architecture. For example, you will learn about flying buttresses when you build the cathedral and the column and beam when you build the Greek temple. Each project is meant simply to get you started. After you have completed your block building project, why not add to it or subtract from it according to your own designs? For example, you may want to add more stores, even a theater complex, to the shopping center or add more highways to the bridge project.

Allow the project to stay built in your block building area for as long as you can. Change it and play with it as you wish. But try hard to change each building to make it your own.

AMERICAN TOWN STRUCTURES

This grouping of structures includes a boat dock from a small New England town and a house and farm buildings from the American countryside. Then, we've included three commercial buildings that gained their popularity in the 1950s and are favorites among children.

Plans for these six projects are illustrated on the next thirty-six pages and are grouped from the least to the most challenging.

page 48 Boat Dock
page 54 Farm
page 60 House
page 66 Shopping Center
page 72 Car Wash
page 78 Drive-in Restaurant

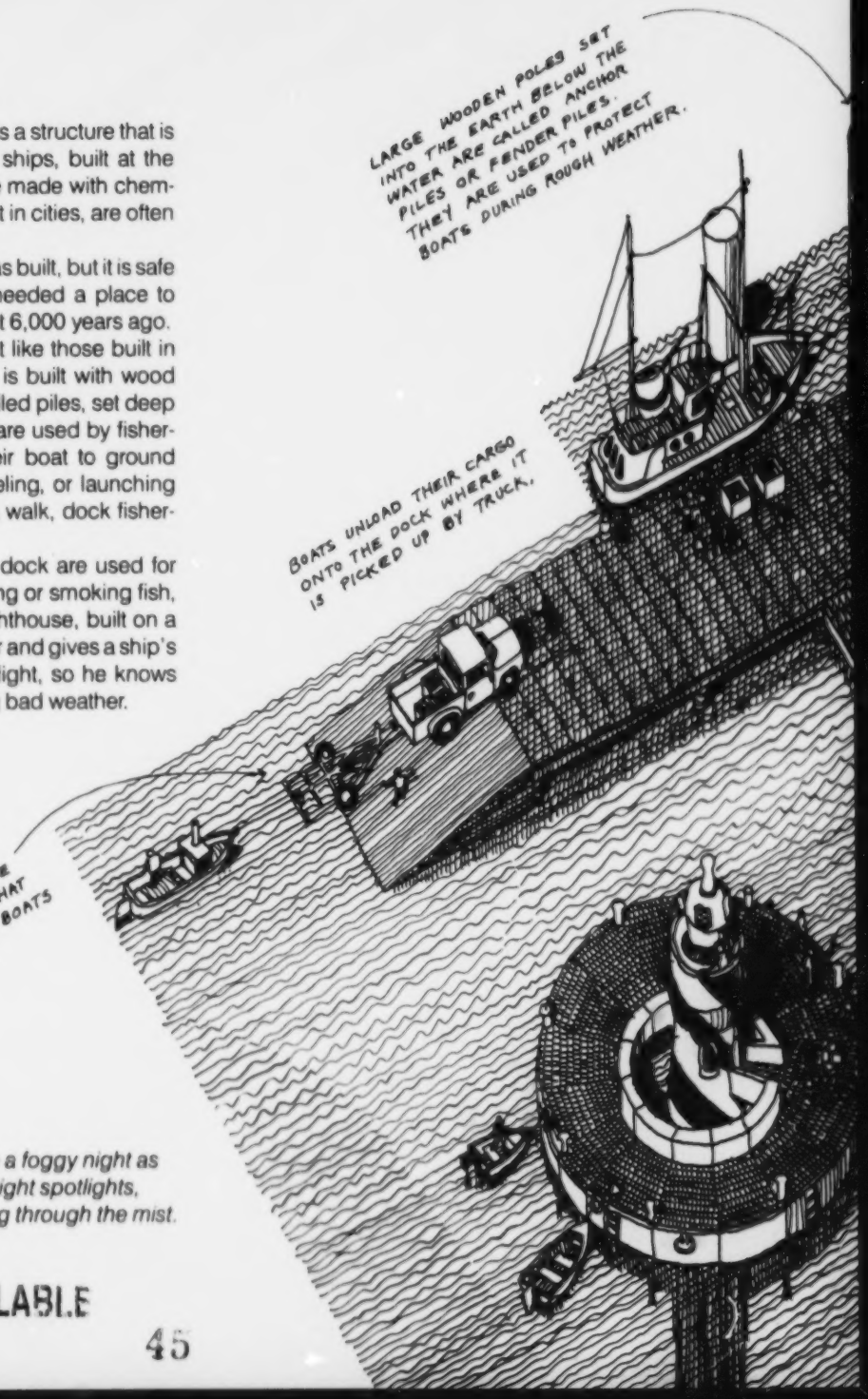
BOAT DOCK

A boat dock, often called a wharf or pier, is a structure that is used as a landing place for boats and ships, built at the shore of a body of water. Most docks are made with chemically treated wood, but larger docks, built in cities, are often made of concrete or steel.

No one knows when the first dock was built, but it is safe to assume that it was soon after man needed a place to anchor his raft or dugout log boat, at least 6,000 years ago.

The block dock shown below is just like those built in small fishing towns around the world. It is built with wood decking supported by wooden poles, called piles, set deep into the ground below the water. Docks are used by fishermen transferring their catches from their boat to ground transportation; by people anchoring, fueling, or launching their pleasure boats; by people out for a walk, dock fishermen, and often by ferry boats.

The two small block sheds on our dock are used for locking up valuable boat gear, for cleaning or smoking fish, or just for general storage. The block lighthouse, built on a stone island, warns boats of shallow water and gives a ship's captain a reference point, a beacon of light, so he knows where he is in the water at night or during bad weather.


LARGE WOODEN POLES SET INTO THE EARTH BELOW THE WATER ARE CALLED ANCHOR PILES OR FENDER PILES. THEY ARE USED TO PROTECT BOATS DURING ROUGH WEATHER.
BOATS UNLOAD THEIR CARGO ONTO THE DOCK WHERE IT IS PICKED UP BY TRUCK.
MOST BOAT DOCKS HAVE LAUNCHING RAMPS THAT ARE USED TO LOWER BOATS INTO THE WATER.

Imagine walking along the boat dock on a foggy night as fishermen unload their catches under bright spotlights, with the beam of the lighthouse streaking through the mist.

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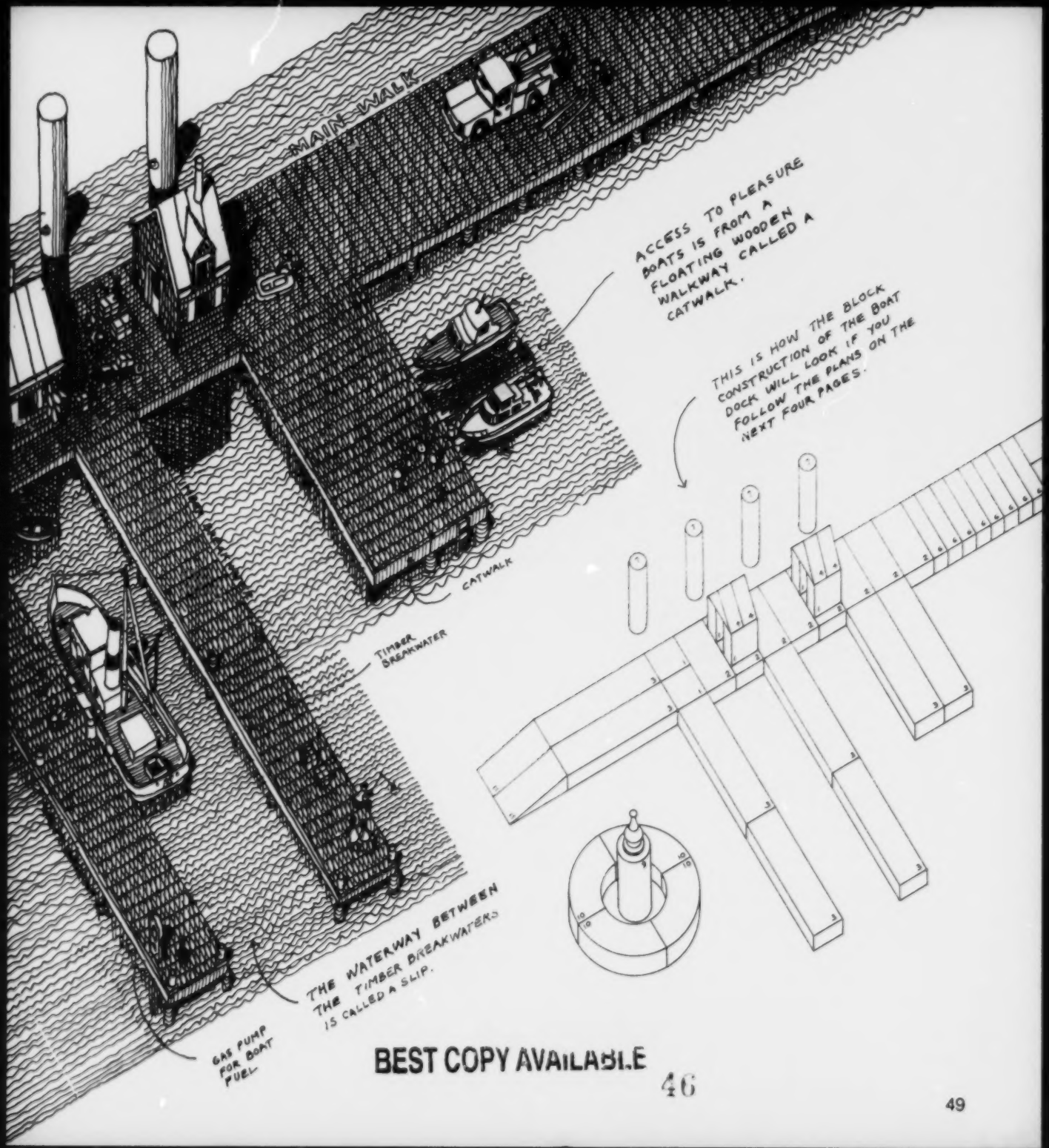
MAIN WALK
ACCESS TO PLEASURE BOATS IS FROM A FLOATING WOODEN WALKWAY CALLED A CATWALK.
THIS IS HOW THE BLOCK CONSTRUCTION OF THE BOAT DOCK WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.
CATWALK
TIMBER BREAKWATER
THE WATERWAY BETWEEN THE TIMBER BREAKWATERS IS CALLED A SLIP.
GAS PUMP FOR BOAT FUEL

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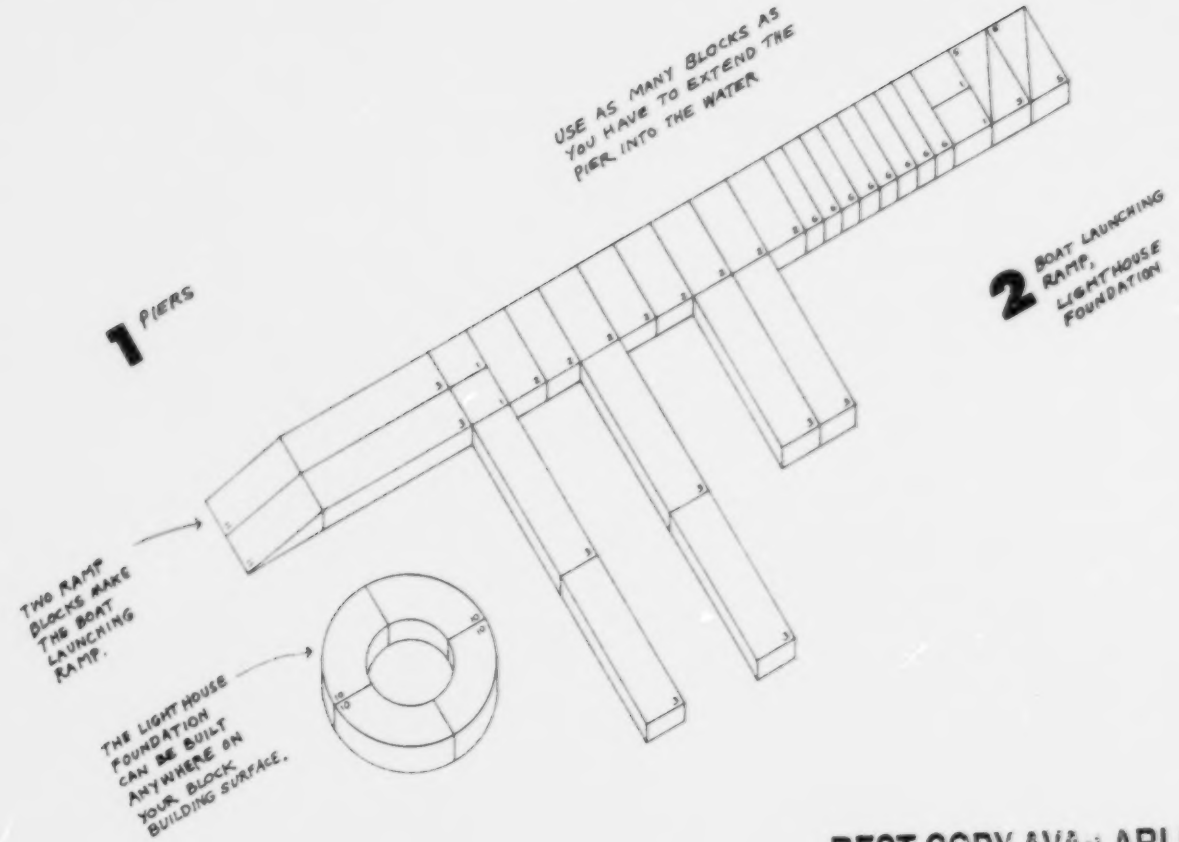
The boat dock is constructed by first building the main pier. The length of it is limited only by the amount of blocks you have. The longer you can make this pier, the more room you'll have to play with your boats. We've located the launching ramp at one end of the main pier and then used six double-unit blocks to create catwalks off the main pier, where boats can dock.

The foundation for the lighthouse is built in a circle with four curve blocks to simulate a stone island.


1 PIERS
USE AS MANY BLOCKS AS YOU HAVE TO EXTEND THE PIER INTO THE WATER
2 BOAT LAUNCHING RAMP, LIGHTHOUSE FOUNDATION
TWO RAMP BLOCKS MAKE THE BOAT LAUNCHING RAMP.
THE LIGHT HOUSE FOUNDATION CAN BE BUILT ANYWHERE ON YOUR BLOCK BUILDING SURFACE.

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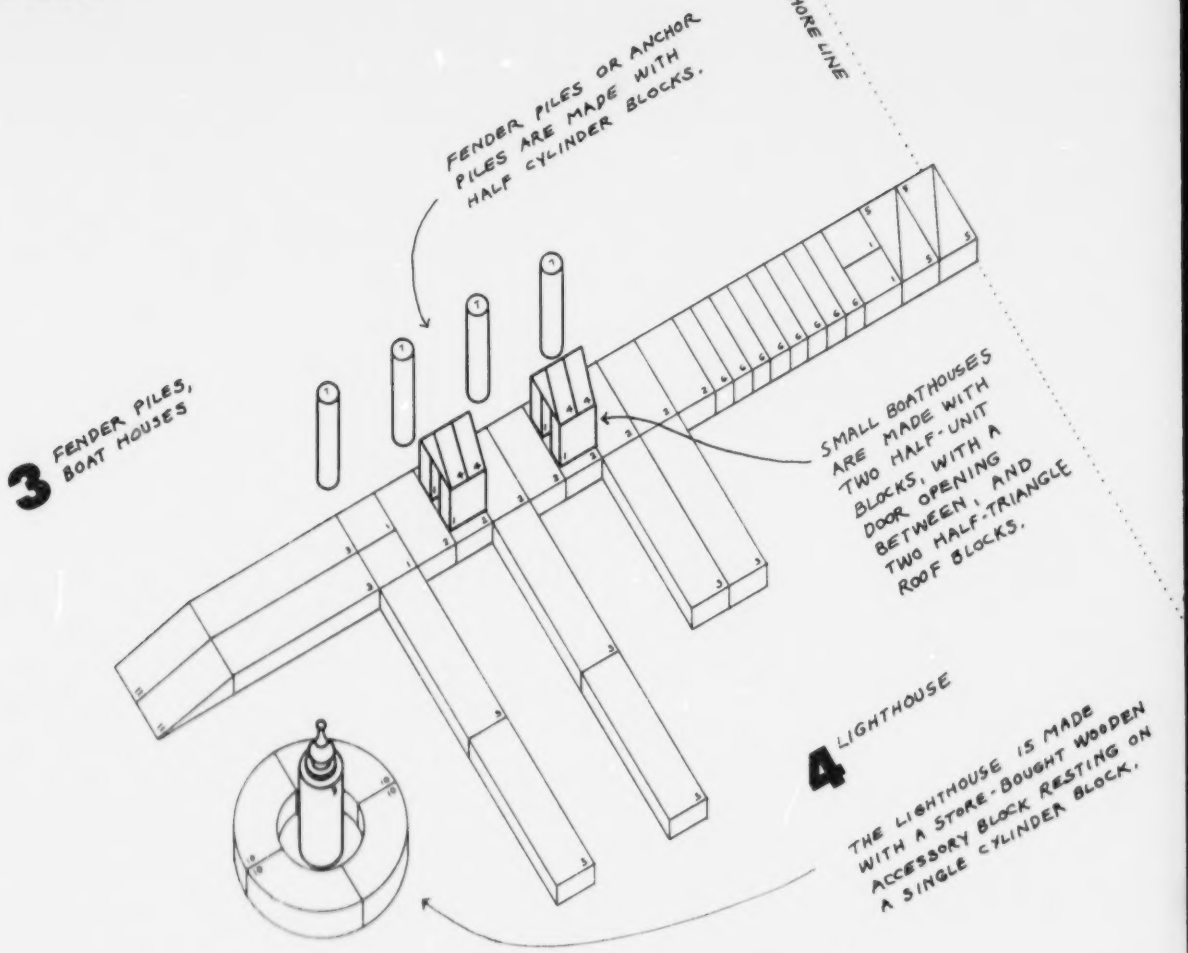
The boat dock is completed when four posts used to tie up the boats, called fender or anchor piles, are placed adjacent to the main pier and the sheds are built with their peaked roofs.

The lighthouse is located in the center of its foundation and will be used to help your boats get home safely to your dock in bad weather.


IMAGINARY SHORE LINE
FENDER PILES OR ANCHOR PILES ARE MADE WITH HALF CYLINDER BLOCKS.
3 FENDER PILES, BOAT HOUSES
SMALL BOATHOUSES ARE MADE WITH TWO HALF-UNIT BLOCKS, WITH A DOOR OPENING BETWEEN, AND TWO HALF-TRIANGLE ROOF BLOCKS.
4 LIGHTHOUSE
THE LIGHTHOUSE IS MADE WITH A STORE-BOUGHT WOODEN ACCESSORY BLOCK RESTING ON A SINGLE CYLINDER BLOCK.

50

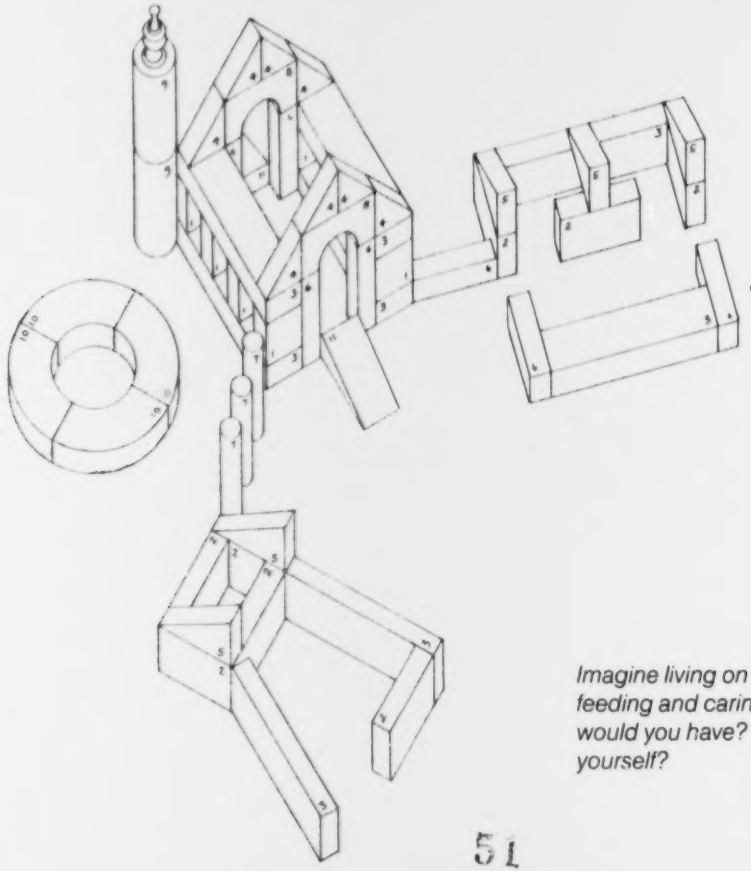
FARM

Farms can be found all over the world, and although they may look different from one country to another, all farmers perform the same basic tasks—growing crops and raising animals.

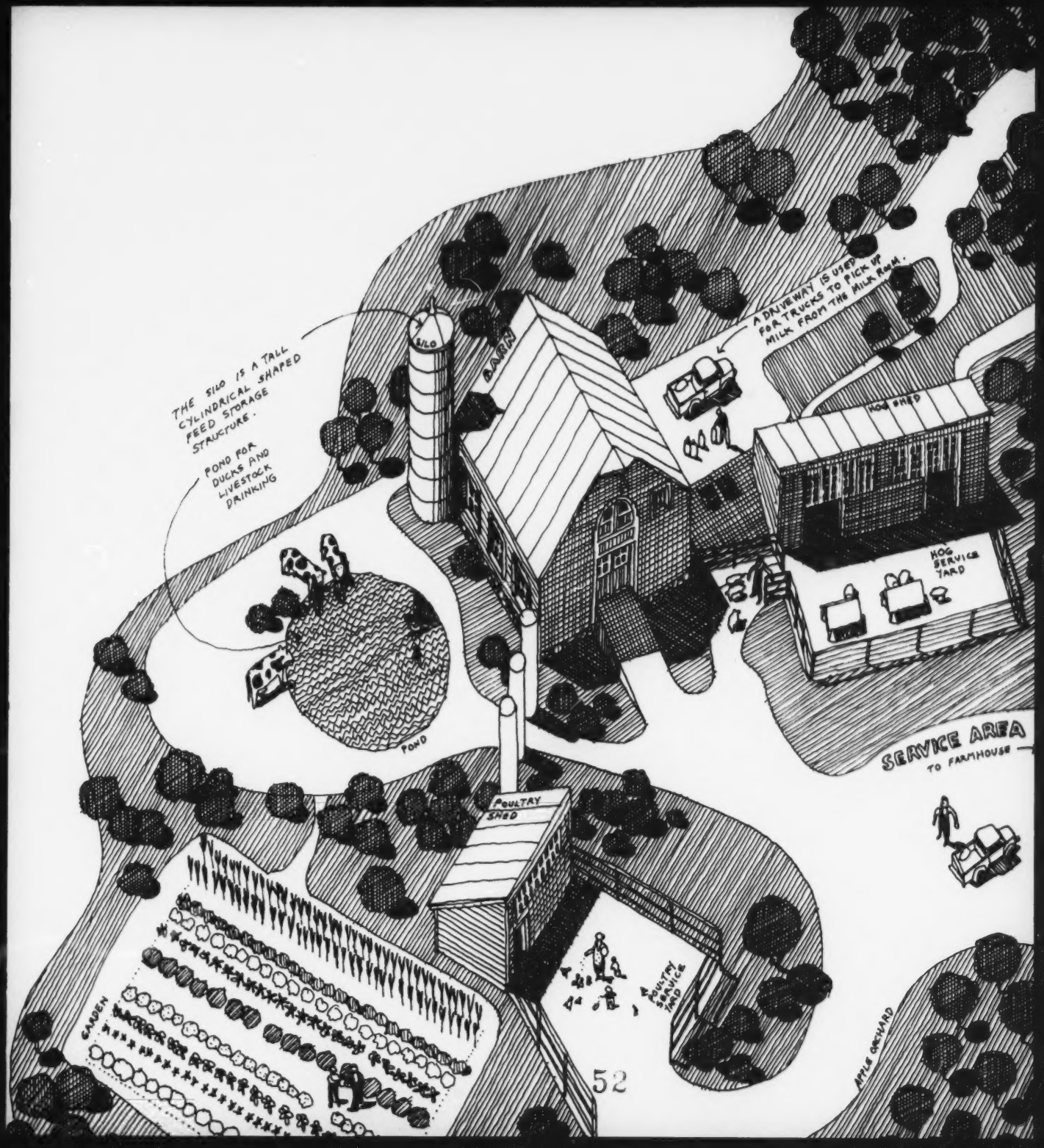
The farm usually consists of a number of buildings, each with its own specific function. The farmhouse (shown on page 60) provides a place for the farmer and his family to live and is usually located near the center of all the activity. Barns, silos, and livestock sheds are arranged away from the house around a service area which provides easy access for the farmer and his machines to all farm activities.

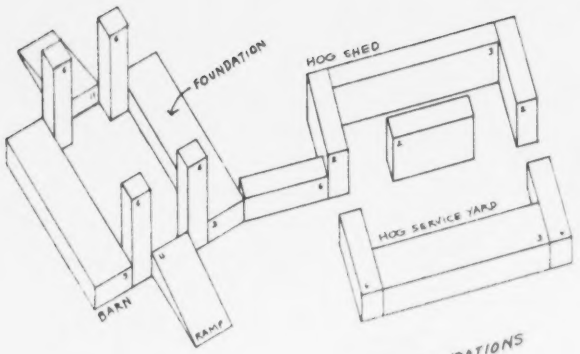
The climate, sun, and wind are very important factors that the farmer must consider when building his farm. If the buildings are located in an ideal location on the farmer's land, they will be warmed by the sun and shielded from cold winter winds by a closely-planted row of tall evergreen trees, called a windbreak.

Our farm consists of a cow barn, two livestock sheds, a pond, and a garden. The farmhouse is located nearby, out of the picture. Feel free to make more sheds and arrange the buildings as you like. But remember that farm buildings are usually placed according to how well they work with other farm buildings and how well they retain heat in winter and keep cool in summer.



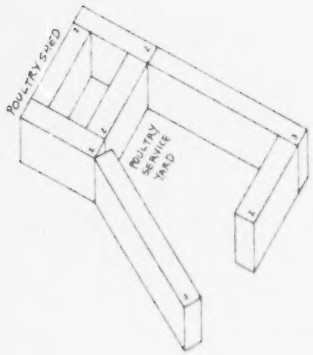
Imagine living on a farm and how much fun it would be feeding and caring for your animals. What kind of animals would you have? Would you grow food for them and for yourself?

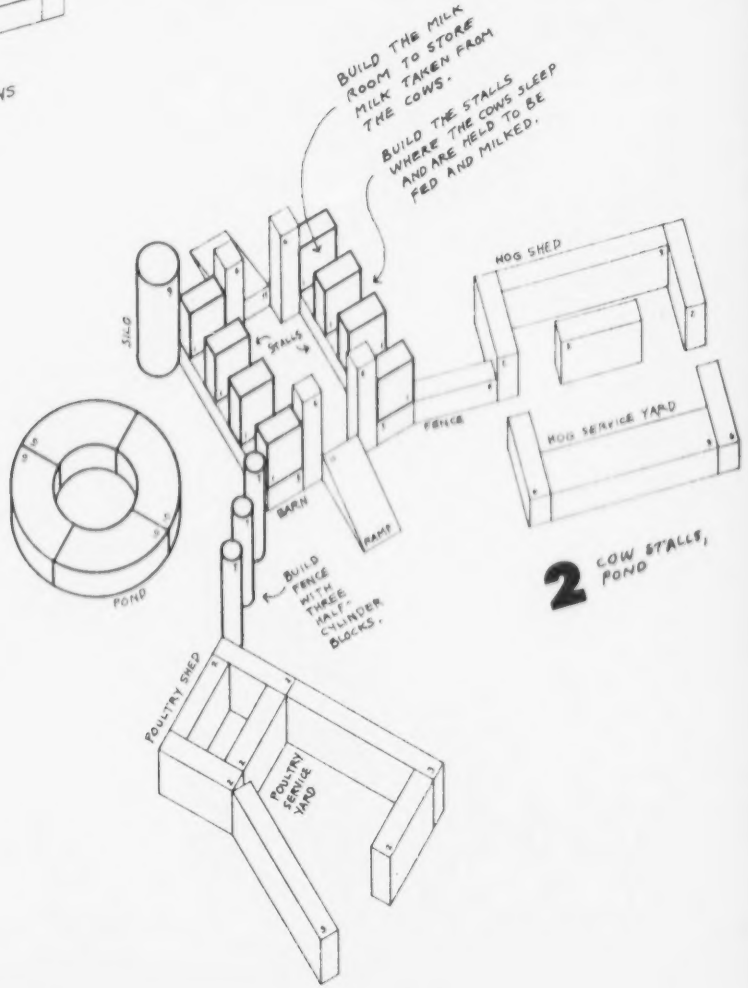

THE SILO IS A TALL CYLINDRICAL SHAPED FEED STORAGE STRUCTURE.
POND FOR DUCKS AND LIVESTOCK DRINKING
SILO
BARN
A DRIVEWAY IS USED FOR TRUCKS TO PICK UP MILK FROM THE MILK ROOM.
HOG SHED
HOG SERVICE YARD
POND
SERVICE AREA
TO FARMHOUSE
POULTRY SHED
POULTRY SERVICE YARD
GARDEN
APPLE ORCHARD



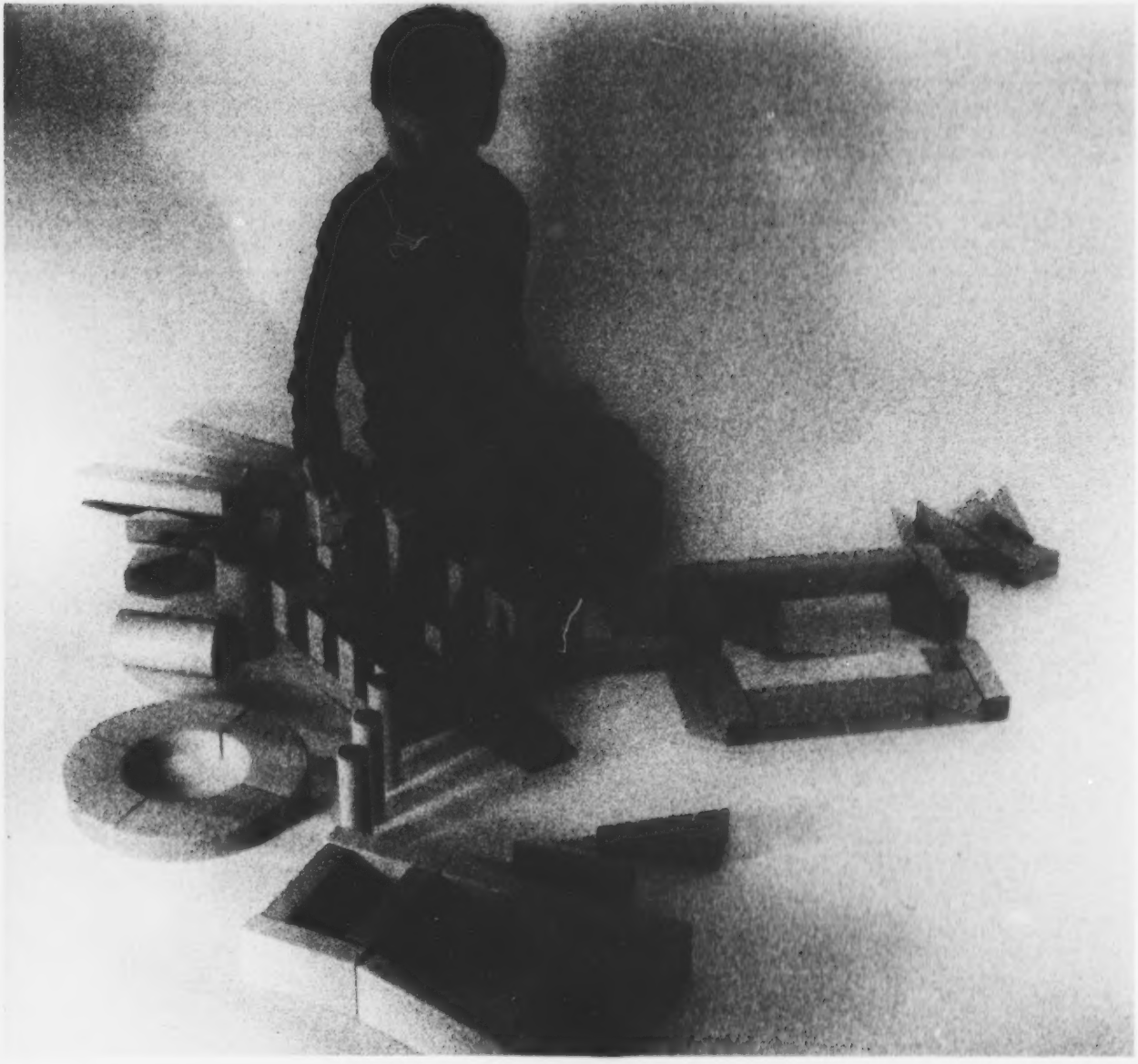
1 FOUNDATIONS

To begin the farm, start by laying out the foundations for the three buildings: the barn and the two livestock sheds as shown in Step 1. Then add the cow stall blocks and silo base to the barn foundation. Try to allow enough room around your buildings in your play space for the pond, the garden, and an area for cows to graze.

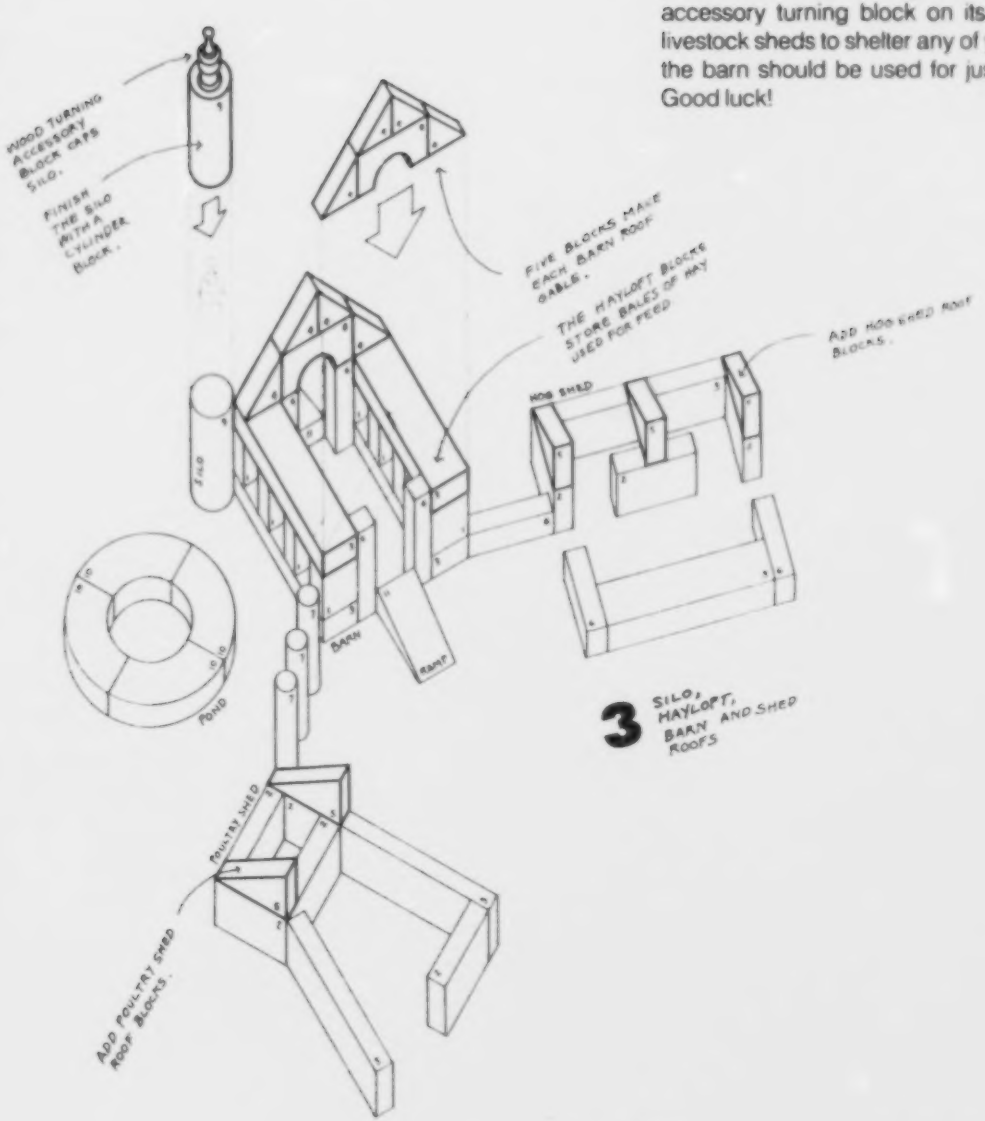




2 COW STALLS, POND



To complete your farm, add the hayloft level to the barn and then add the sloped-roof blocks to all three buildings. Complete the silo by adding another cylinder block and an accessory turning block on its top. Feel free to use the livestock sheds to shelter any of your small animal toys. But, the barn should be used for just cows and a few horses. Good luck!



3 SILO, HAYLOFT, BARN AND SHED ROOFS

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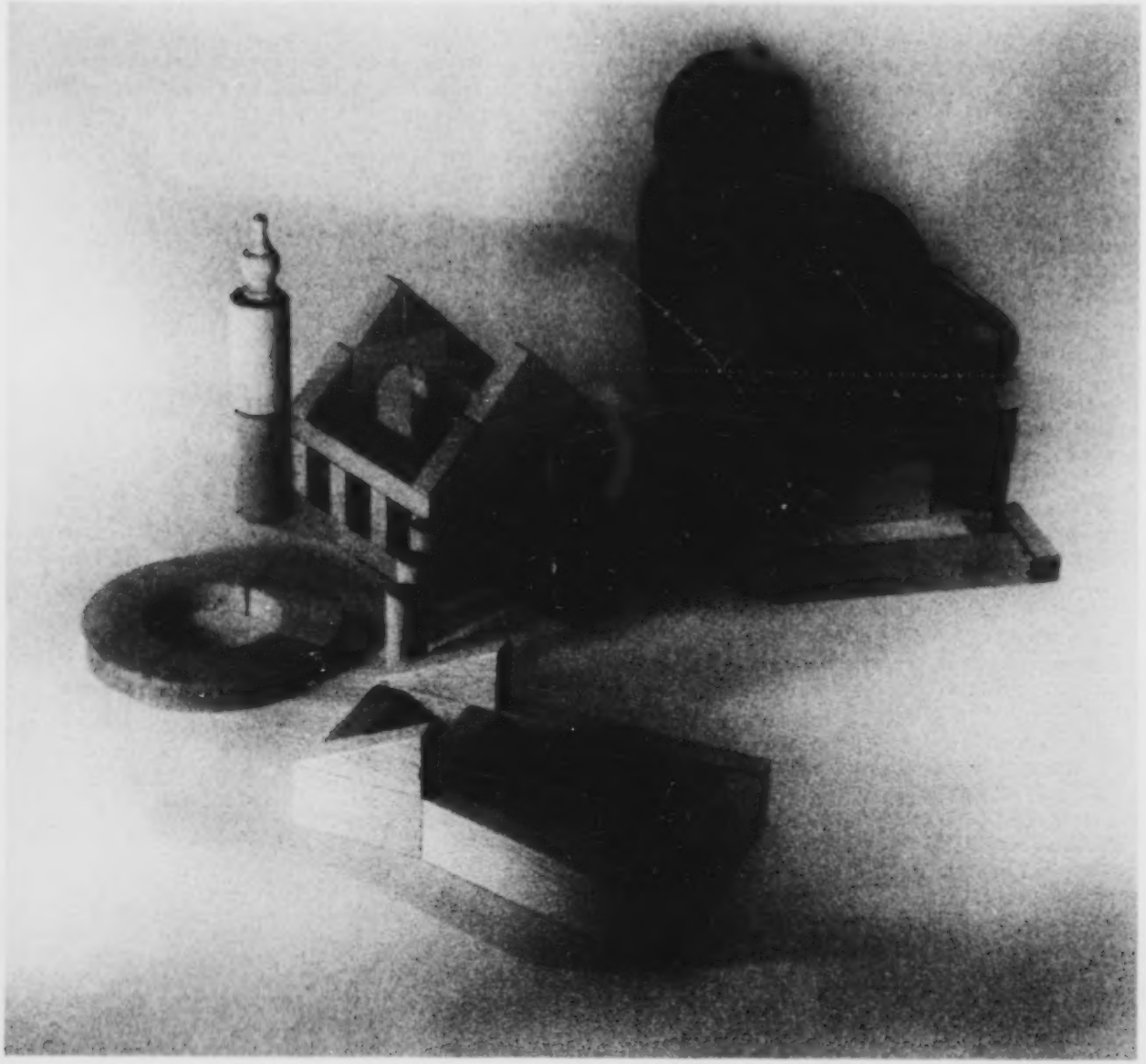

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HOUSE

A house is a sheltered place where people live, where they perform the basic activities of life like sleeping, cooking, eating, and relaxing. Houses around the world are built with a wide variety of materials and methods in a wide variety of sizes and styles, depending on the climate, geography, and economy of an area.

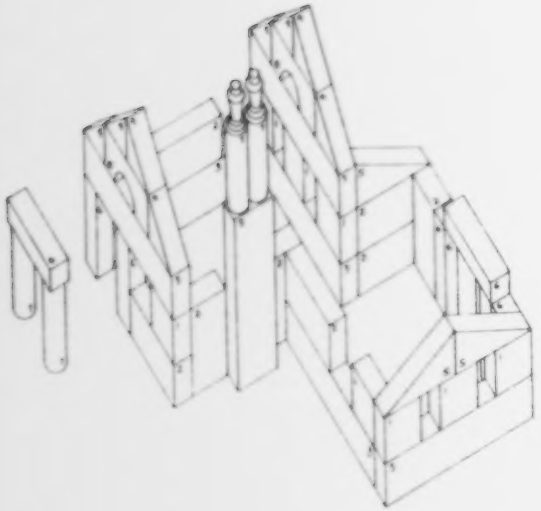
The earliest houses were built in caves in the earth and served well to protect their occupants from the weather or other dangers. Most houses throughout recorded history have been built of wood, stone, or brick and permanently attached to a piece of land with a foundation. But, some countries have houses that are built on stilts over water or on pontoons floating on water. There are portable houses made of cloth (tents) and houses made of sod, baled hay, bamboo, mud, woven straw, even ice (igloos). But no matter what material, the house has always been a place that provides a sense of security for the people living in it.

All houses have a roof to shed snow or rain and walls to give privacy and to keep out the cold or heat. Most houses have windows and doors in their walls to allow light, ventilation, and people to pass through. Small houses often have all the living functions in one room while large houses have the luxury of dividing up the living functions into rooms like the kitchen, dining room, living room, bedroom, and bathroom.

Our block house is a small American farmhouse built in the mid-nineteenth century in the Greek Revival style, which was common in those days. It is designed at the same scale as dollhouses (1″ = 1′-0″) so you can furnish your building if you have some dollhouse furniture. It has a first floor living room and a kitchen/dining room wing. The second floor, which would contain the bedrooms and a bathroom, and the roof are imaginary.

Please read the section on creating spaces beginning on page 40 before starting this project. It will help you build this project and then change it to suit your needs: you might add more rooms or you might even build a block model of your own home.

Imagine walking up the sidewalk to the front porch of the house, ringing the doorbell, and having your best friend take you into the kitchen, and suddenly all your friends appear and shout "Surprise!" – it's a surprise birthday party for you.



THIS IS HOW THE BLOCK CONSTRUCTION OF THE HOUSE WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.

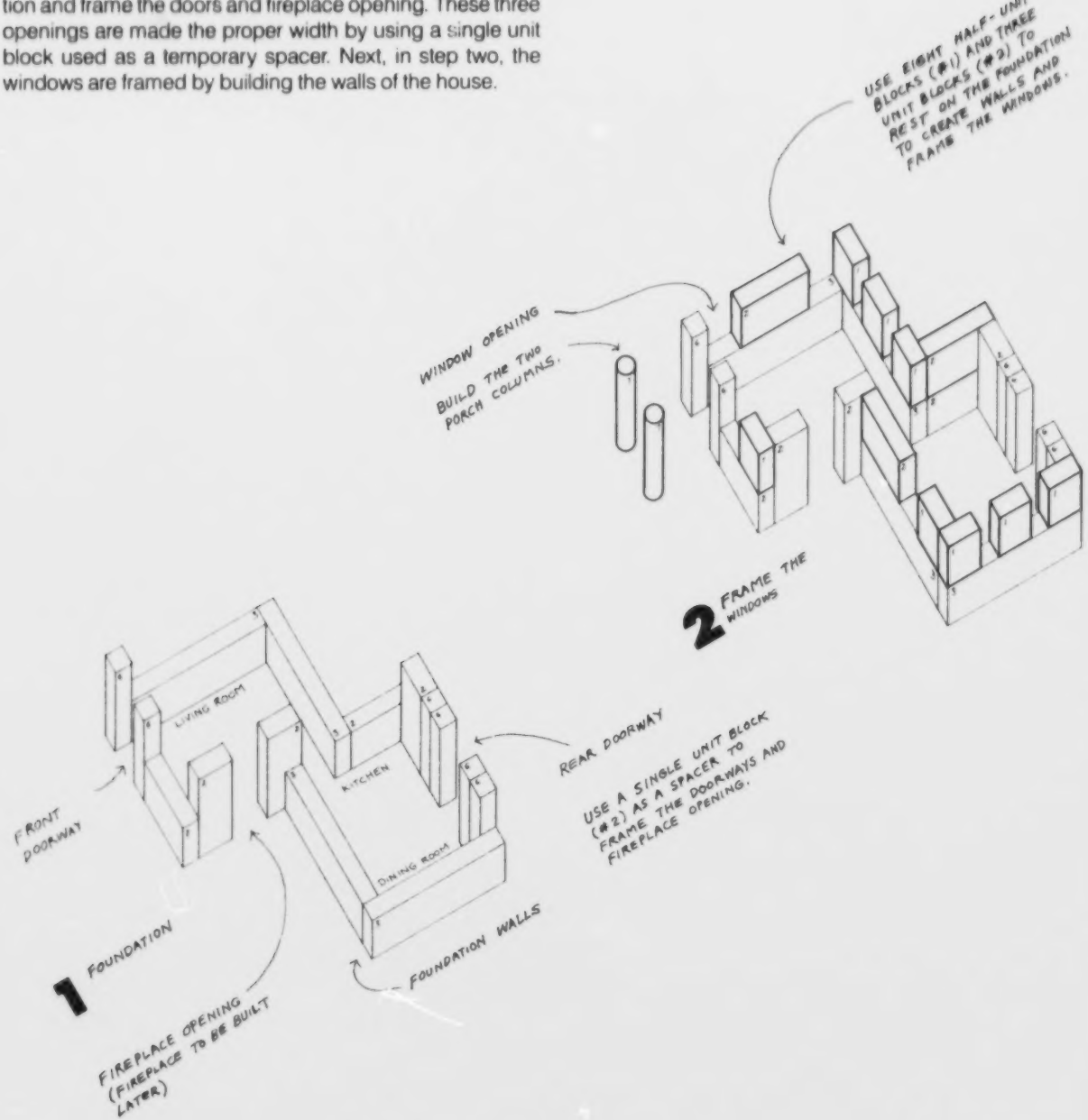
IMAGINARY TIN ROOF

CHIMNEY

DORMER

KITCHEN-DINING ROOM WING

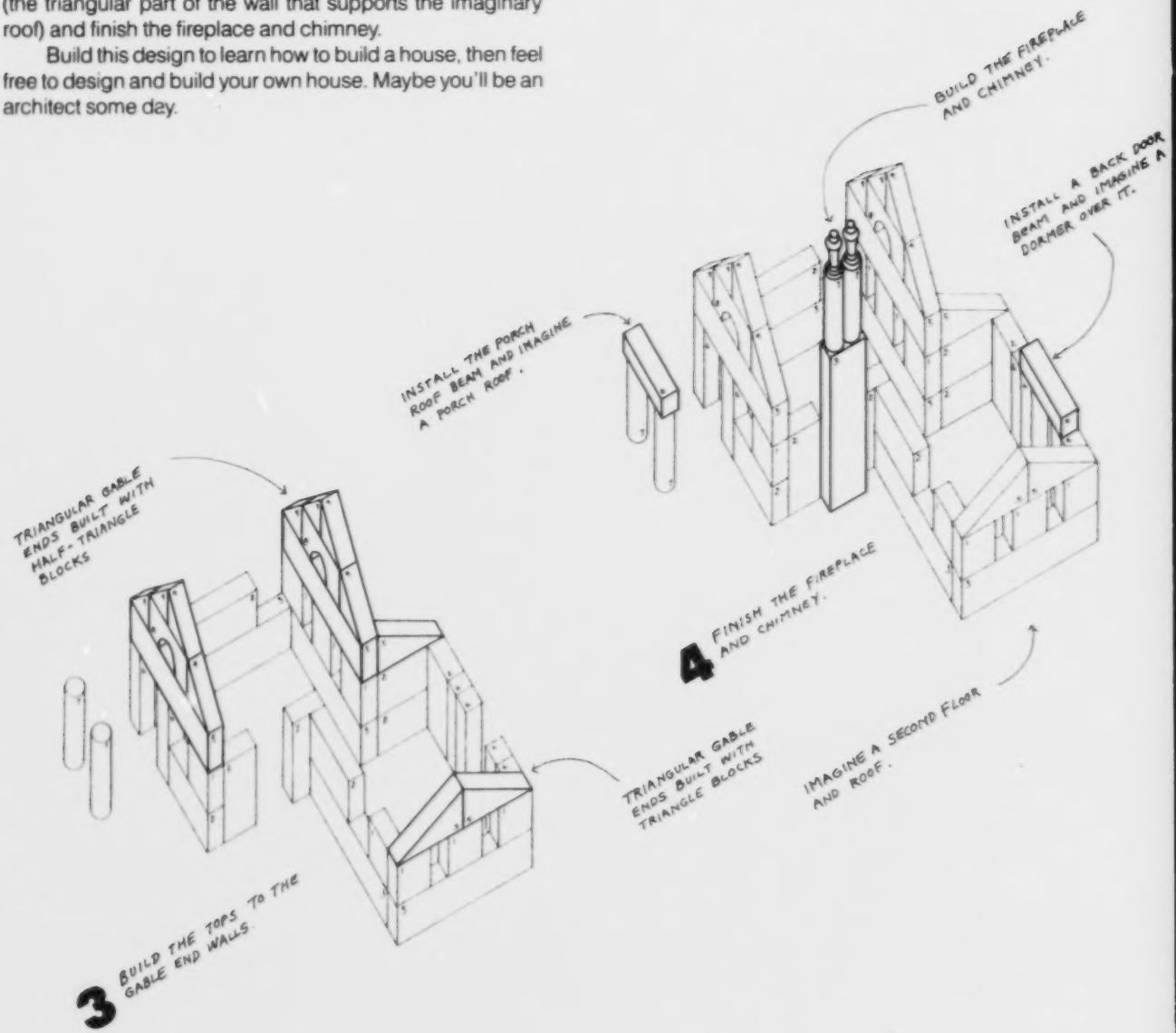
The first step in building our house is to construct the foundation and frame the doors and fireplace opening. These three openings are made the proper width by using a single unit block used as a temporary spacer. Next, in step two, the windows are framed by building the walls of the house.


USE EIGHT HALF-UNIT BLOCKS (#1) AND THREE UNIT BLOCKS (#2) TO REST ON THE FOUNDATION TO CREATE THE WALLS AND FRAME THE WINDOWS.
WINDOW OPENING
BUILD THE TWO PORCH COLUMNS.
2 FRAME THE WINDOWS
LIVING ROOM
KITCHEN
DINING ROOM
FRONT DOORWAY
REAR DOORWAY
USE A SINGLE UNIT BLOCK (#2) AS A SPACER TO FRAME THE DOORWAYS AND FIREPLACE OPENING.
1 FOUNDATION
FIREPLACE OPENING (FIREPLACE TO BE BUILT LATER)
FOUNDATION WALLS

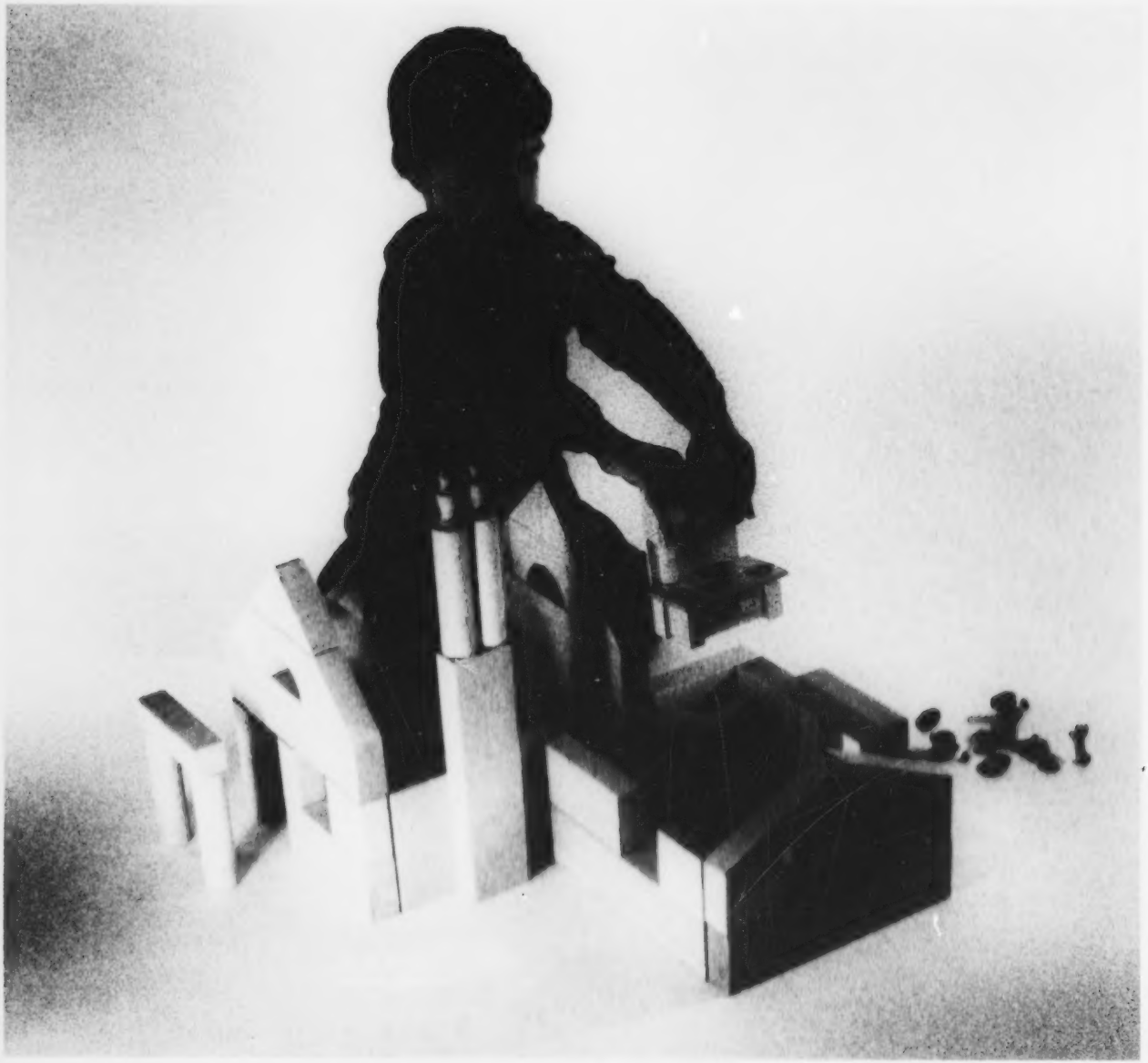
60

To finish your block house, build the gable ends to the walls (the triangular part of the wall that supports the imaginary roof) and finish the fireplace and chimney.

Build this design to learn how to build a house, then feel free to design and build your own house. Maybe you'll be an architect some day.


BUILD THE FIREPLACE AND CHIMNEY.
INSTALL A BACK DOOR BEAM AND IMAGINE A DORMER OVER IT.
INSTALL THE PORCH ROOF BEAM AND IMAGINE A PORCH ROOF.
TRIANGULAR GABLE ENDS BUILT WITH HALF-TRIANGLE BLOCKS
4 FINISH THE FIREPLACE AND CHIMNEY.
TRIANGULAR GABLE ENDS BUILT WITH TRIANGLE BLOCKS
IMAGINE A SECOND FLOOR AND ROOF.
3 BUILD THE TOPS TO THE GABLE END WALLS.

61

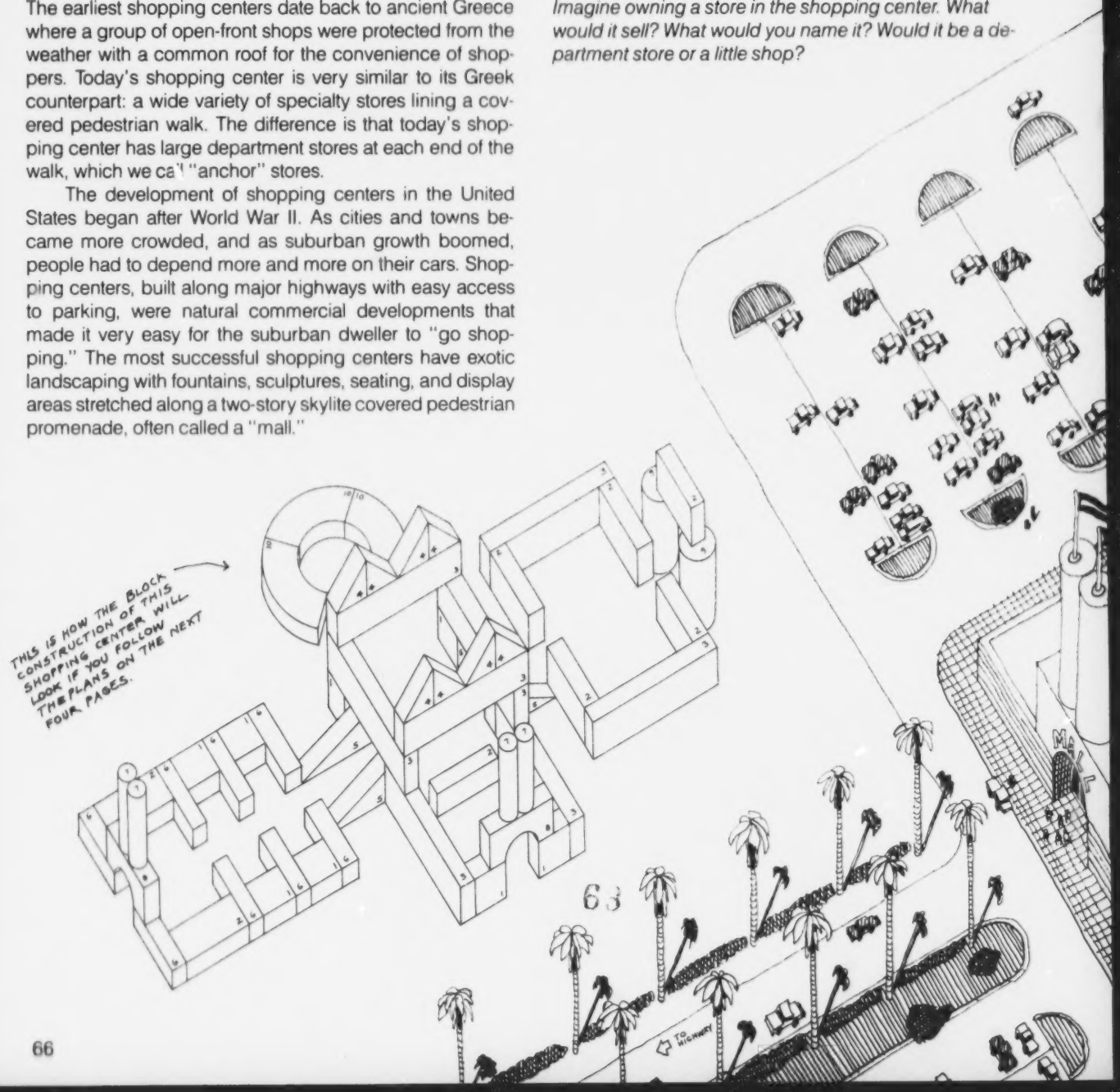


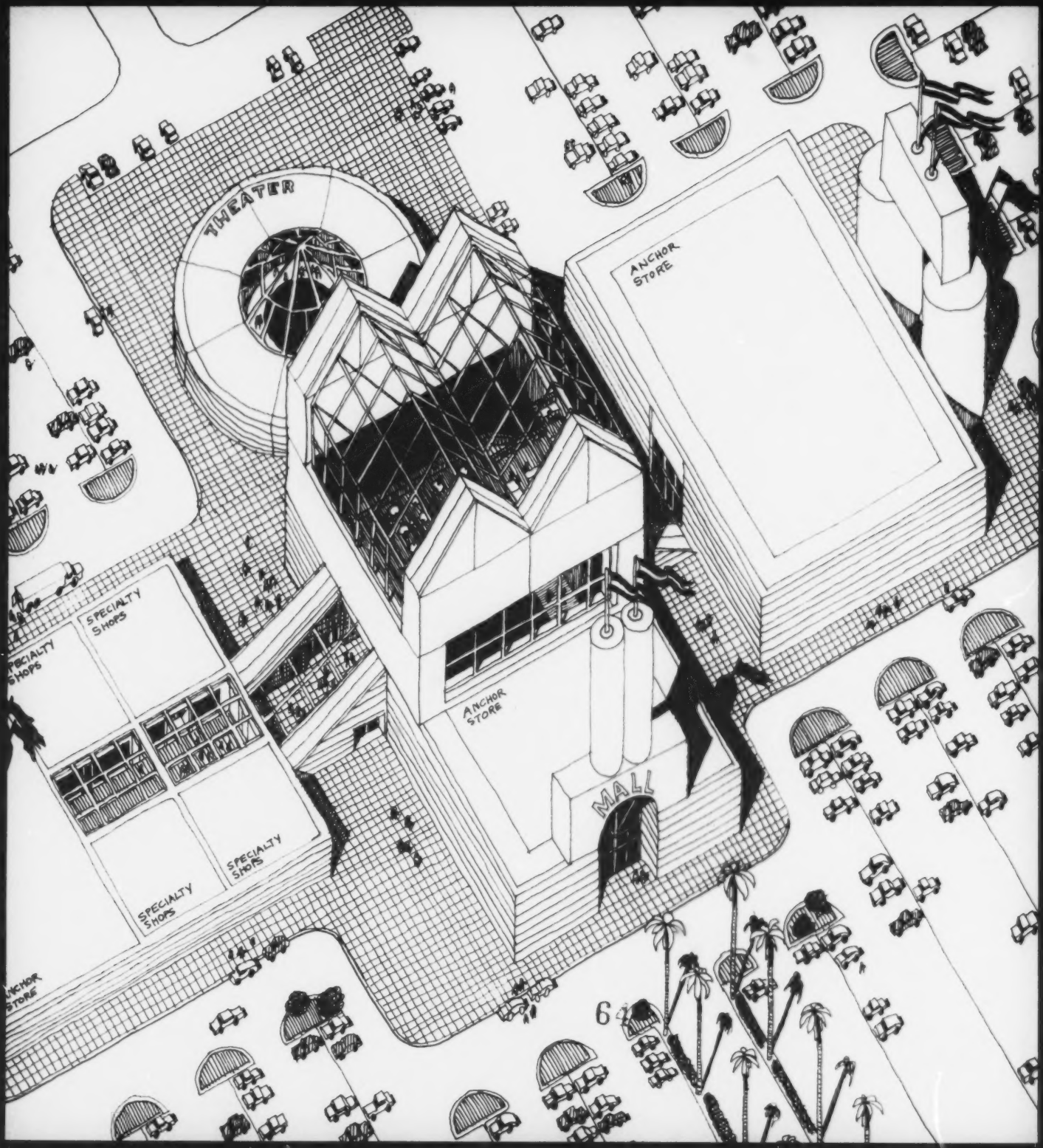
SHOPPING CENTER

The earliest shopping centers date back to ancient Greece where a group of open-front shops were protected from the weather with a common roof for the convenience of shoppers. Today's shopping center is very similar to its Greek counterpart: a wide variety of specialty stores lining a covered pedestrian walk. The difference is that today's shopping center has large department stores at each end of the walk, which we ca'l "anchor" stores.

The development of shopping centers in the United States began after World War II. As cities and towns became more crowded, and as suburban growth boomed, people had to depend more and more on their cars. Shopping centers, built along major highways with easy access to parking, were natural commercial developments that made it very easy for the suburban dweller to "go shopping." The most successful shopping centers have exotic landscaping with fountains, sculptures, seating, and display areas stretched along a two-story skylite covered pedestrian promenade, often called a "mall."

Imagine owning a store in the shopping center. What would it sell? What would you name it? Would it be a department store or a little shop?

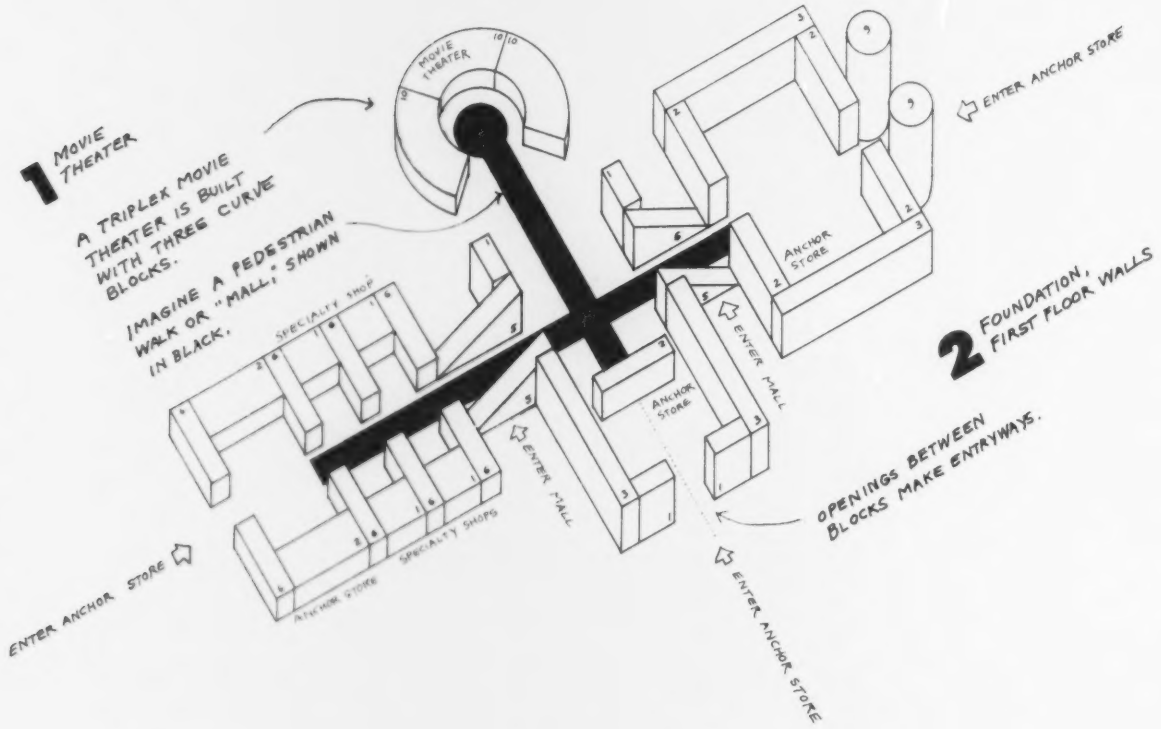

THIS IS HOW THE BLOCK CONSTRUCTION OF THIS SHOPPING CENTER WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.
TO HIGHWAY


THEATER
ANCHOR STORE
ANCHOR STORE
MALL
SPECIALTY SHOPS
SPECIALTY SHOPS
SPECIALTY SHOPS
SPECIALTY SHOPS
6

Our shopping center is designed like many of today's malls. It has three anchor stores, a movie theater, a skylit second floor food court (an area with a wide variety of fast-food shops facing a common dining area), specialty shops, and plenty of parking.

Construction is started by building the foundation and the first floor walls of the shopping center's shops, movie theater, and anchor stores.

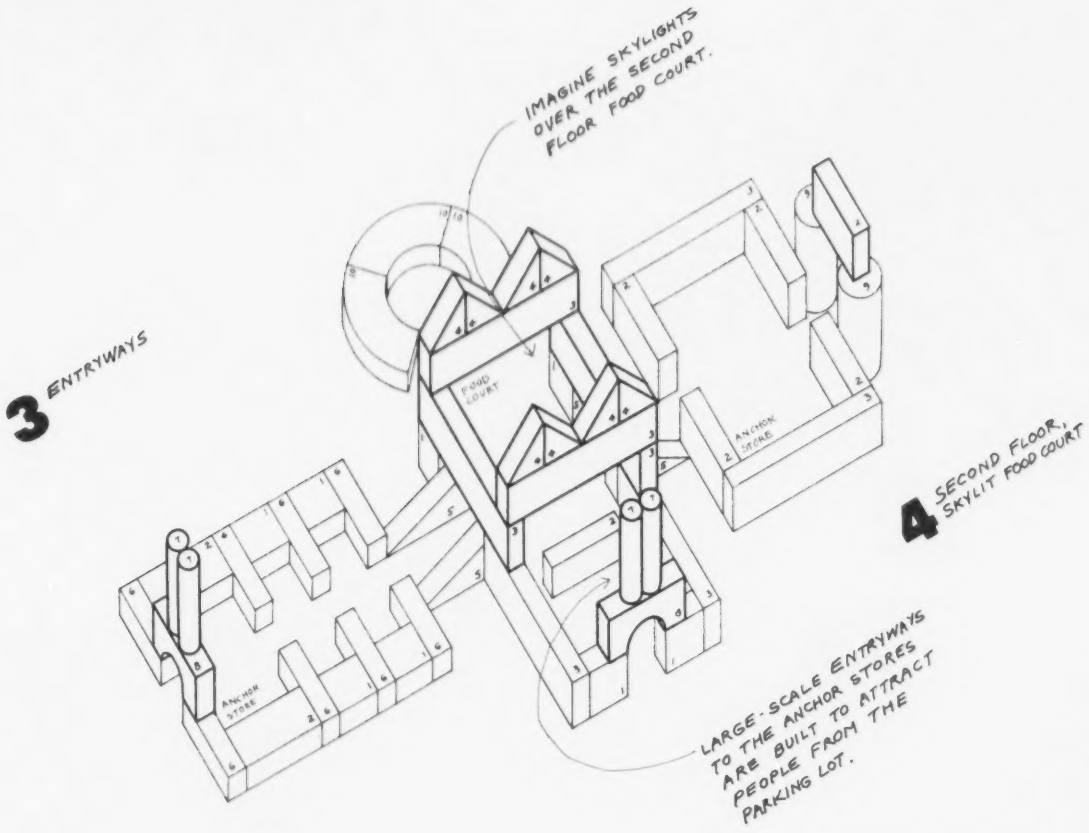
Take note that if you walk from one anchor store to another, along our pedestrian walk, or mall, you pass by (and often enter) all the specialty stores. Shopping center designers always strategically place the anchor stores so that they act like magnets, drawing people through the shopping center. This is what makes the shopping center work—even the small shops have a good location with a maximum number of shoppers seeing their store.

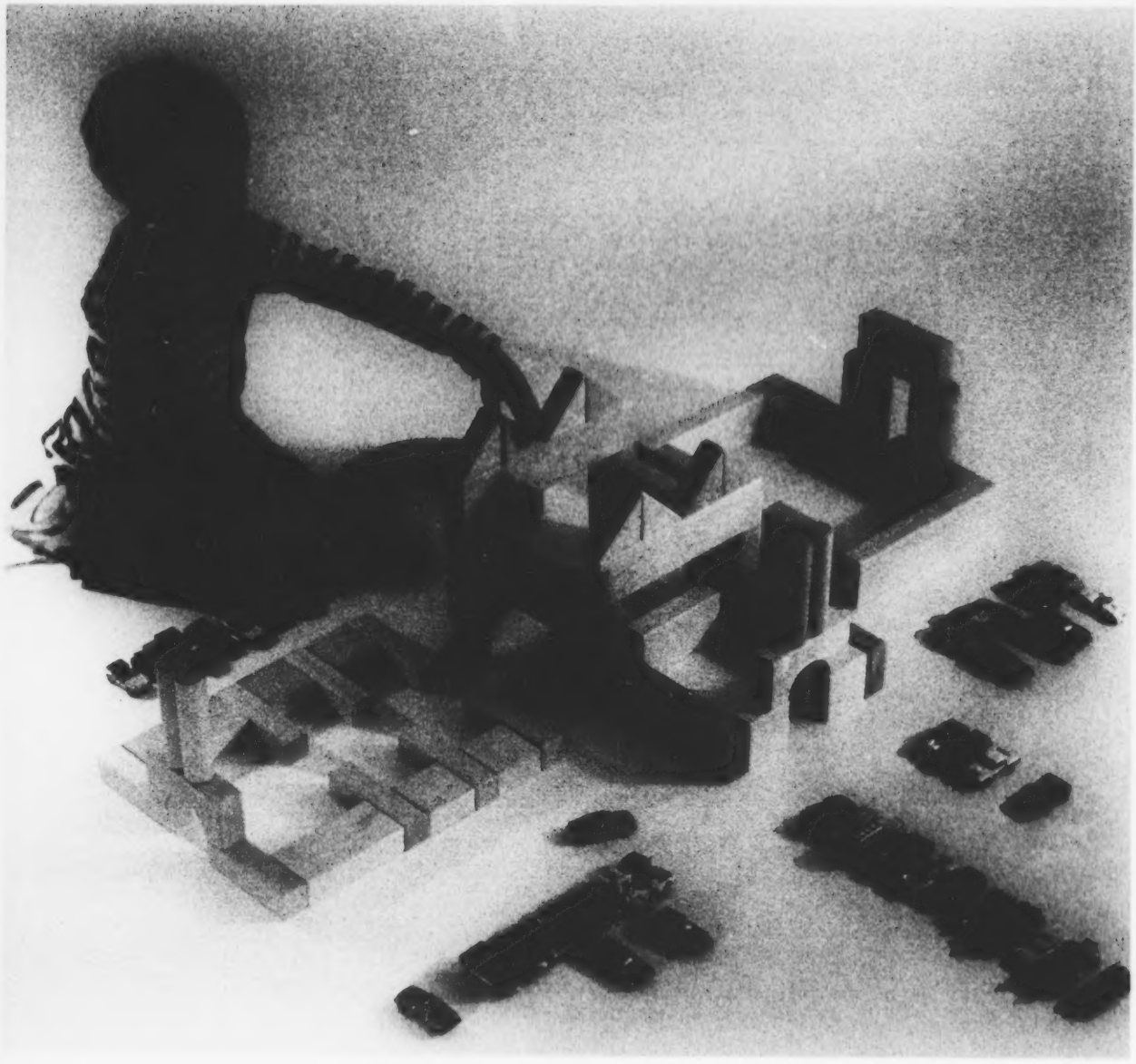


66

The shopping center is completed when you've built the entryways and the second floor food court structure. There are imaginary skylights over the mall part of our design and over the food court.

Traffic patterns and parking arrangements will depend on how big your block building area is, so you will have to design them around your shopping center.


IMAGINE SKYLIGHTS OVER THE SECOND FLOOR FOOD COURT.
3 ENTRYWAYS
FOOD COURT
ANCHOR STORE
ANCHOR STORE
4 SECOND FLOOR, SKYLIT FOOD COURT
LARGE-SCALE ENTRYWAYS TO THE ANCHOR STORES ARE BUILT TO ATTRACT PEOPLE FROM THE PARKING LOT.



CAR WASH

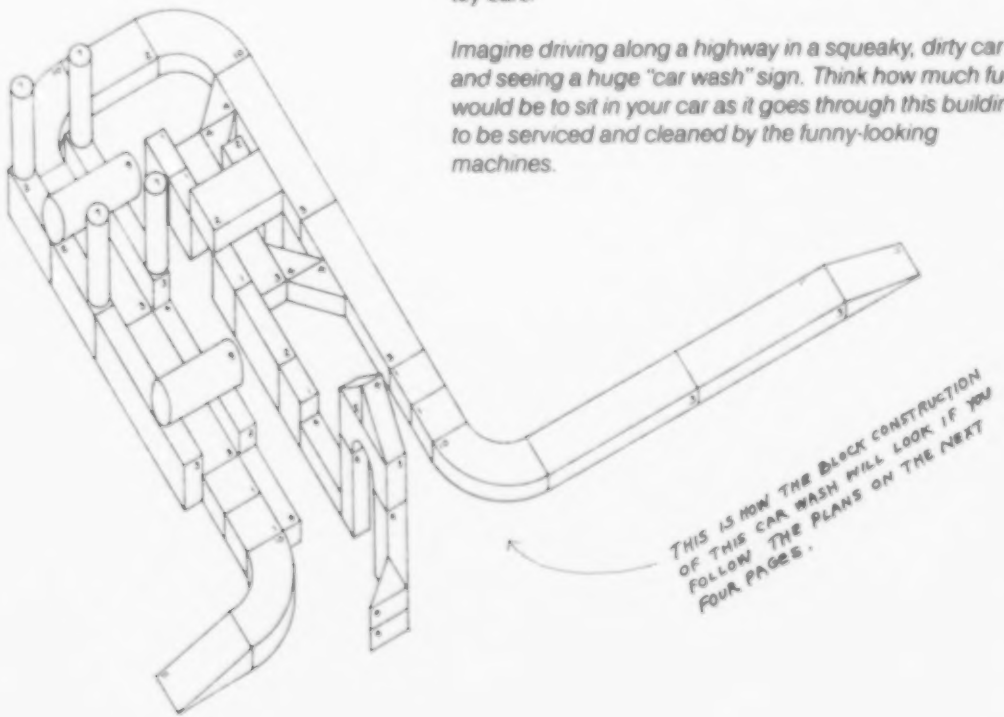
The automated car wash became popular in America in the early 1950s when a clean, waxed car had become a status symbol. The novelty of putting one's car on a conveyor belt and watching it as it traveled through a series of soaping, washing, rinsing, and drying operations was thrilling then. The car wash was a wonderful toy-like machine that performed an ordinary, time-consuming task fast and inexpensively.

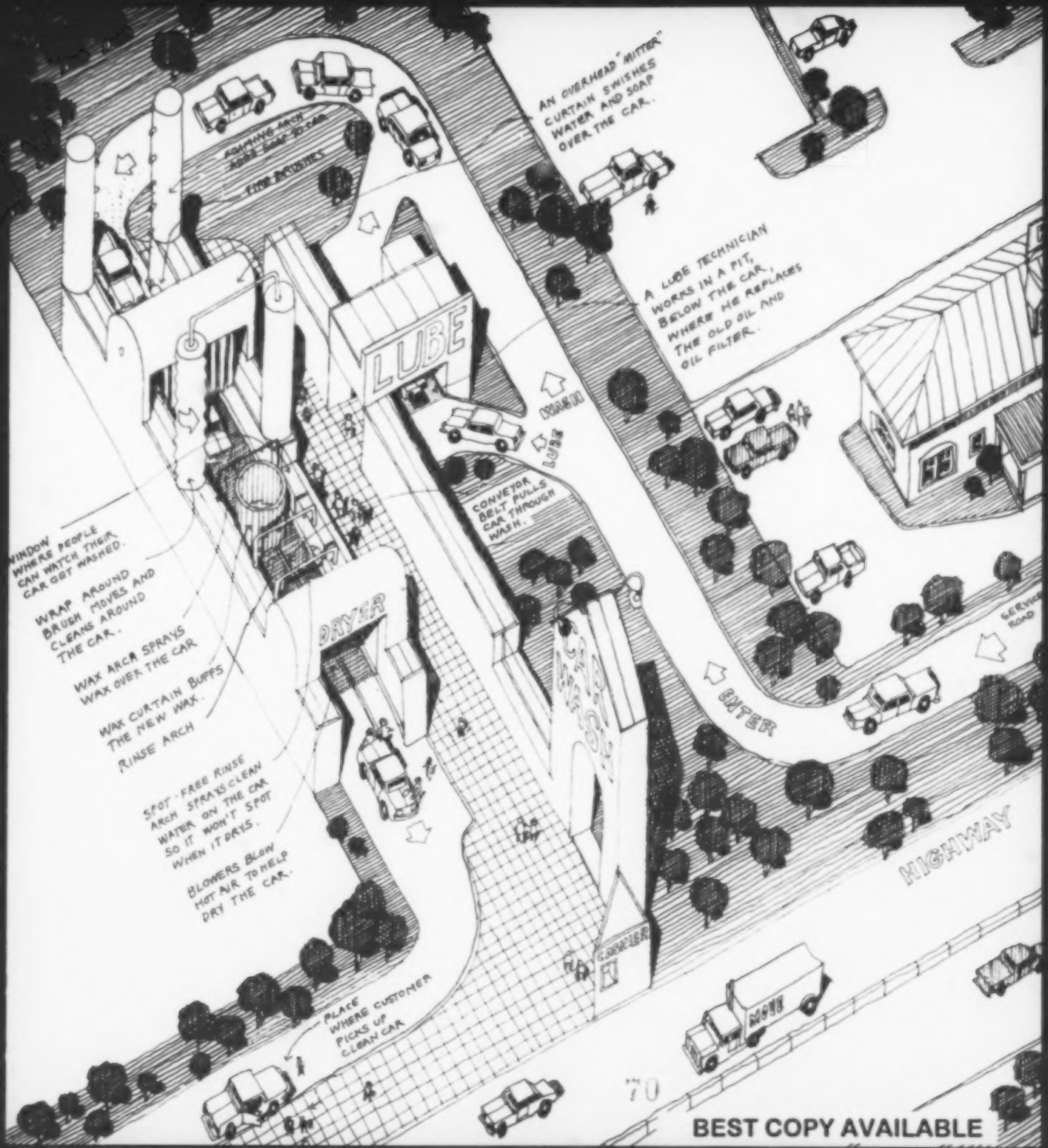
Today's car washes offer waxing, buffing, interior vacuuming, and underbody protection as additional options to the car owner. Some car washes are capable of carrying 160 cars per hour (over 1,000 cars per day) through their automated assembly line. Some car washes insist that owners ride in their cars, while others insist that owners get out of their cars and watch, through special windows, as the cars go through the wash.

In the mid 1980s, many car washes added a garage adjacent to their assembly line where the car owner could stop for an oil change, fluid check, and lubrication. The car owner could spend fifteen minutes at a car wash/quick-lube combination and enjoy the pleasure of driving away with a clean, well-oiled, well-lubricated automobile.

Our block car wash is a modern 1990s design that gives the car owner (you) the ability to have all the tasks listed above performed to his vehicle. We've got the quick-lube, oil-change garage, and we've got a super-automated assembly-line car wash that is perfect for die-cast metal toy cars.

Imagine driving along a highway in a squeaky, dirty car and seeing a huge "car wash" sign. Think how much fun it would be to sit in your car as it goes through this building to be serviced and cleaned by the funny-looking machines.

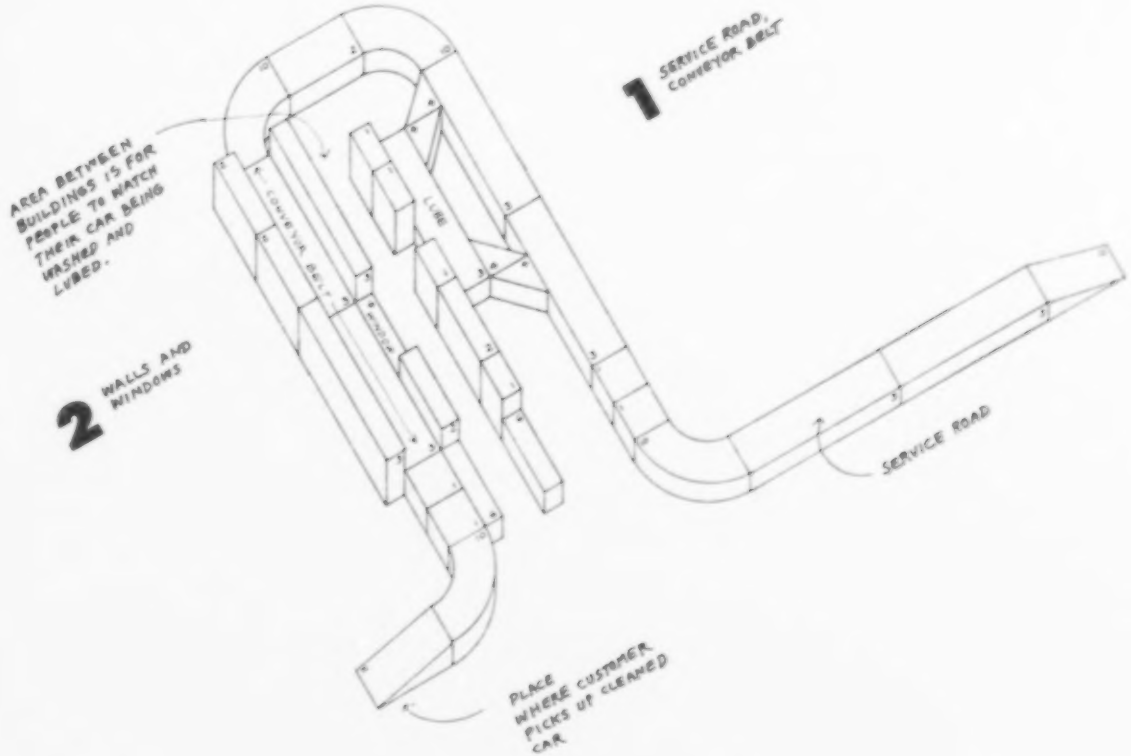



AN OVERHEAD "MITTER" CURTAIN SWISHES WATER AND SOAP OVER THE CAR.
A LUBE TECHNICIAN WORKS IN A PIT, BELOW THE CAR, WHERE HE REPLACES THE OLD OIL AND OIL FILTER.
LUBE
WASH
DRYER
CONVEYOR BELT PULLS CAR THROUGH WASH.
WINDOW WHERE PEOPLE CAN WATCH THEIR CAR GET WASHED.
WRAP AROUND BRUSH MOVES AND CLEANS AROUND THE CAR.
WAX ARCH SPRAYS WAX OVER THE CAR
WAX CURTAIN BUFFS THE NEW WAX.
RINSE ARCH
SPOT-FREE RINSE ARCH SPRAYS CLEAN WATER ON THE CAR SO IT WON'T SPOT WHEN IT DRYS.
BLOWERS BLOW HOT AIR TO HELP DRY THE CAR.
PLACE WHERE CUSTOMER PICKS UP CLEAN CAR
CASHIER
EXIT
SERVICE ROAD
HIGHWAY
MOBIL

BEST COPY AVAILABLE

The first task in building the car wash is to lay out the path that the car will take off the highway and through the assembly-line wash. A block service road is constructed to lead the car in a loop around to the car wash beginning. Next, the walls and windows of the car wash and the quick-lube buildings are built, creating an area between them for customers to walk and to see their cars being washed and lubricated.

After the car has completed its journey through the buildings, an area is constructed where owners can pick up their cars and drive on a service road back to the highway.



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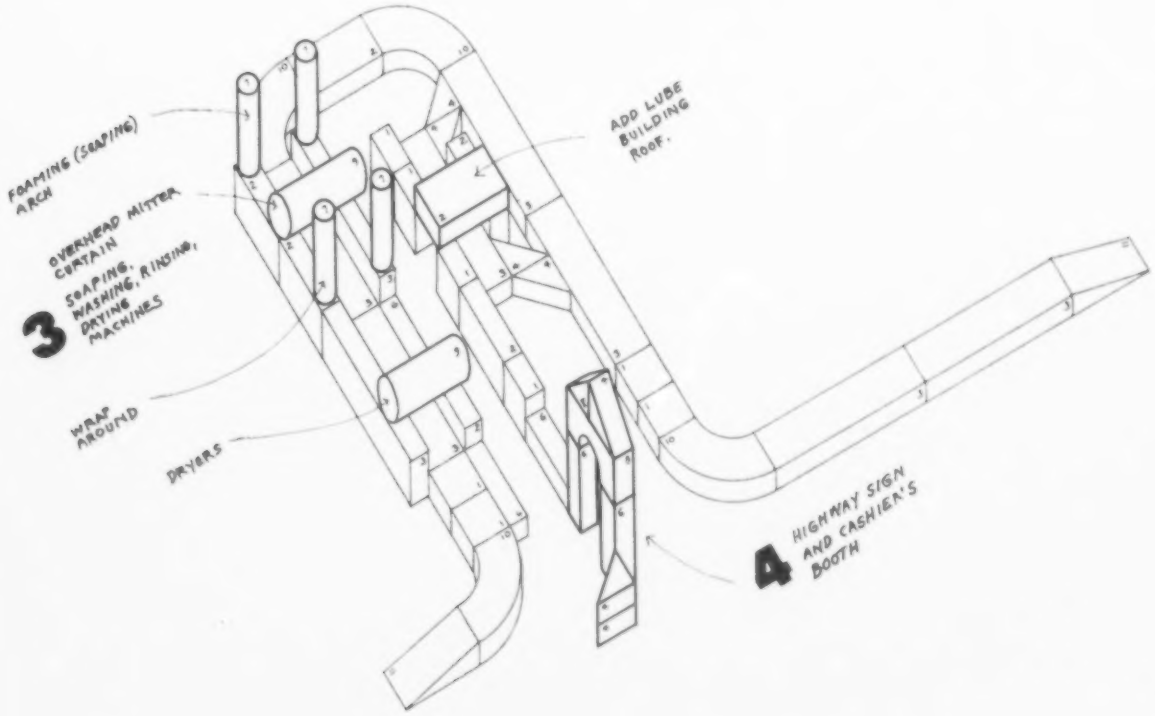
The car wash is completed when the soaping, washing, waxing, rinsing, and drying machines are added to the car-wash assembly line. A big sign attracts customers from the highway, and a cashier's booth collects money charged for car washing and/or oil changing and lubrication.

It is interesting to note that the architecture of our car wash is formed to suit the needs of the highway and the car. Only a small part of the building is designed for people. The sign, for example, must be large enough to be seen from far away so that drivers who want to get their cars washed have time to pull off the highway. The buildings must accommodate the dimensions of the car (turning radius, height, width, length, etc.) so that they are safe. The design is not pretty, but it is functional, like most highway architecture. Some examples of this kind of building that you may be familiar with are drive-through fast-food restaurants and banks.

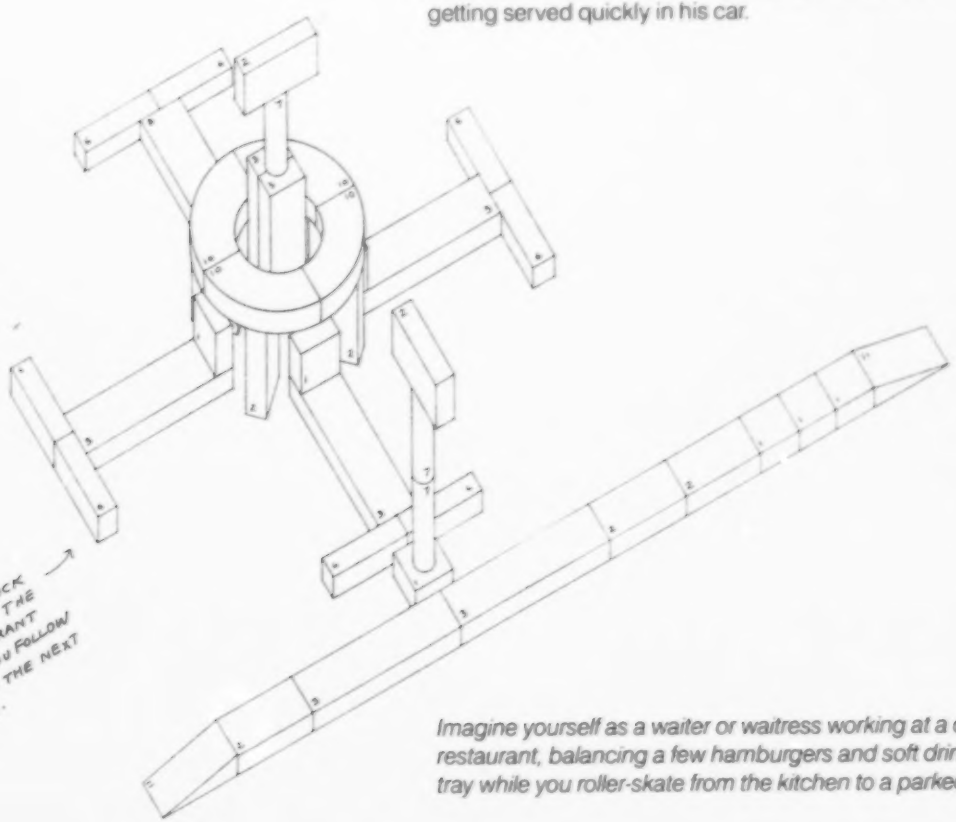

FOAMING (SOAPING) ARCH
OVERHEAD MITTER CURTAIN
3 SOAPING, WASHING, RINSING, DRYING MACHINES
WRAP AROUND DRYERS
ADD LUBE BUILDING ROOF.
4 HIGHWAY SIGN AND CASHIER'S BOOTH

DRIVE-IN RESTAURANT

During the 1950s, the idea of going out to dinner was becoming an important part of our culture. And going out to dinner meant driving there in a car, another important part of our culture during that time. The roadsides along American highways became a new frontier dedicated to serving the needs of the motorist, and it was then and there that the drive-in restaurant was born.

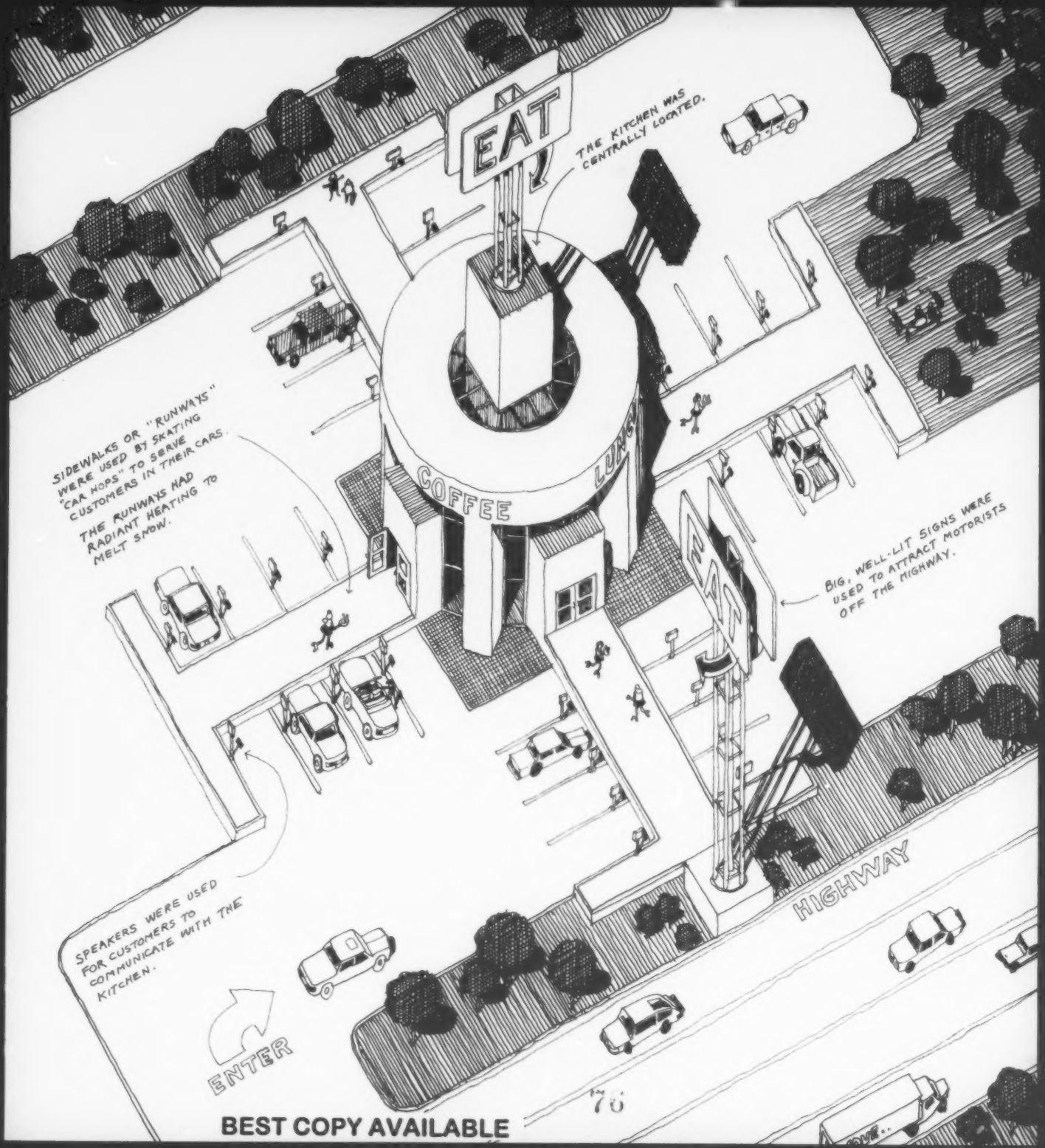
Drive-in restaurants ranged in type from hamburger stands to coffee shops and while some served food only to customers in cars, others offered additional service to travelers who wished to sit at booths or tables inside. Because they were located along busy roads, the drive-ins used large signs and bright lights to entice possible customers off the highway to stop at their restaurant. Once a car parked, a waitress or waiter on roller skates appeared at the car window to take the customer's order. The waitress or waiter, often called a carhop, then skated back to the kitchen with the order. When the food was ready, it was skated back to the car, on trays that attached to the side of the car door with the window down.

Today, the *drive-through* restaurant, like McDonalds or Burger King, has taken the place of the once popular drive-in, but the original purpose remains the same—to provide fast food to the motorist who wants the convenience of getting served quickly in his car.



THIS IS HOW THE BLOCK CONSTRUCTION OF THE DRIVE-IN RESTAURANT WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.

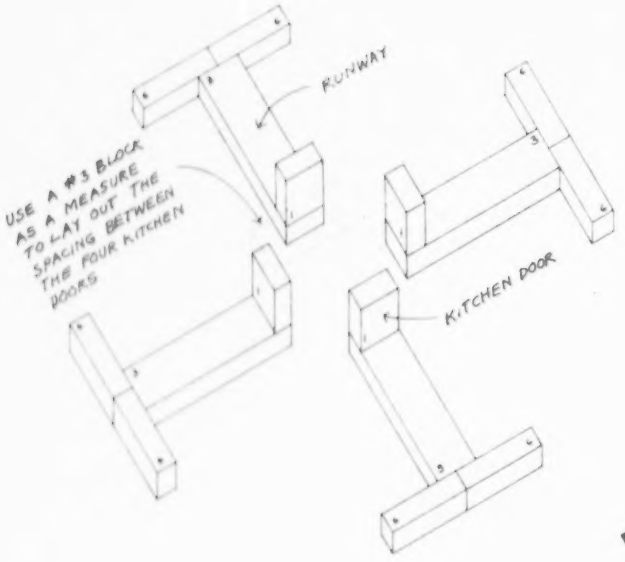
Imagine yourself as a waiter or waitress working at a drive-in restaurant, balancing a few hamburgers and soft drinks on a tray while you roller-skate from the kitchen to a parked car.


EAT
THE KITCHEN WAS CENTRALLY LOCATED.
SIDEWALKS OR "RUNWAYS" WERE USED BY SKATING "CAR HOPS" TO SERVE CUSTOMERS IN THEIR CARS.
THE RUNWAYS HAD RADIANT HEATING TO MELT SNOW.
COFFEE
LUNCH
EAT
BIG, WELL-LIT SIGNS WERE USED TO ATTRACT MOTORISTS OFF THE HIGHWAY.
HIGHWAY
SPEAKERS WERE USED FOR CUSTOMERS TO COMMUNICATE WITH THE KITCHEN.
ENTER

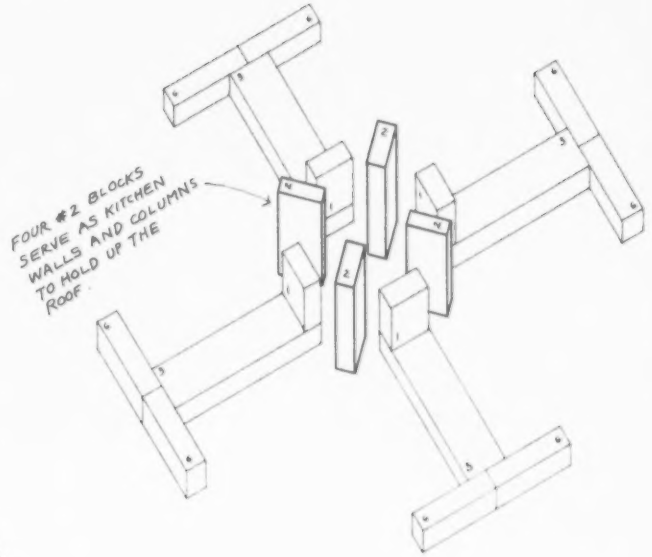
BEST COPY AVAILABLE

Our drive-in restaurant has a central kitchen with four radiating sidewalks, called "runways," used by roller-skating waiters and waitresses, called "carhops."

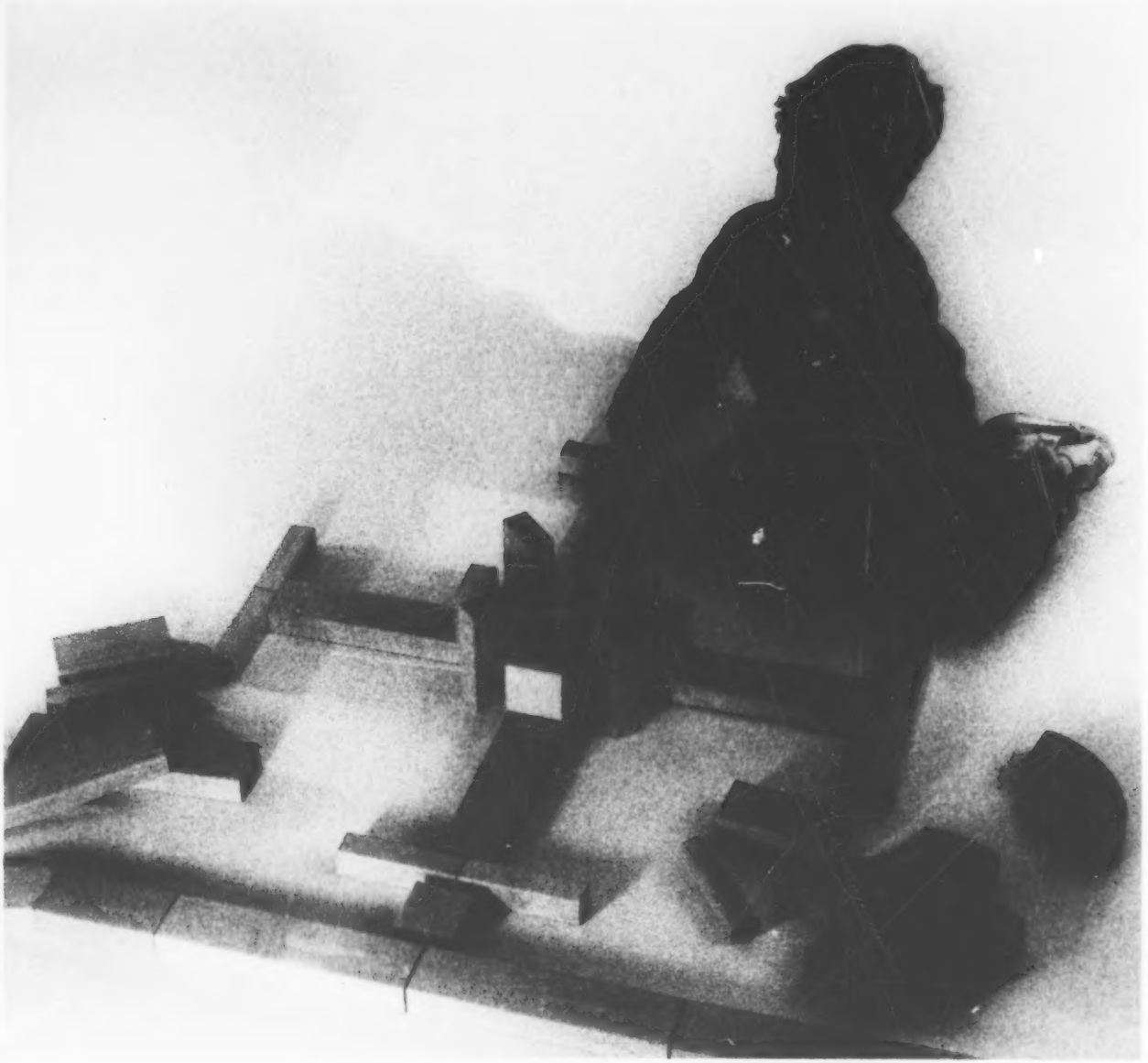
The first step in building our drive-in is to build the radiating runways and the kitchen doors. Make sure that your spacing is correct, as shown in step 1. Next, begin to construct the centrally located kitchen by installing walls, as shown in step 2.



1 RUNWAYS, KITCHEN DOORS



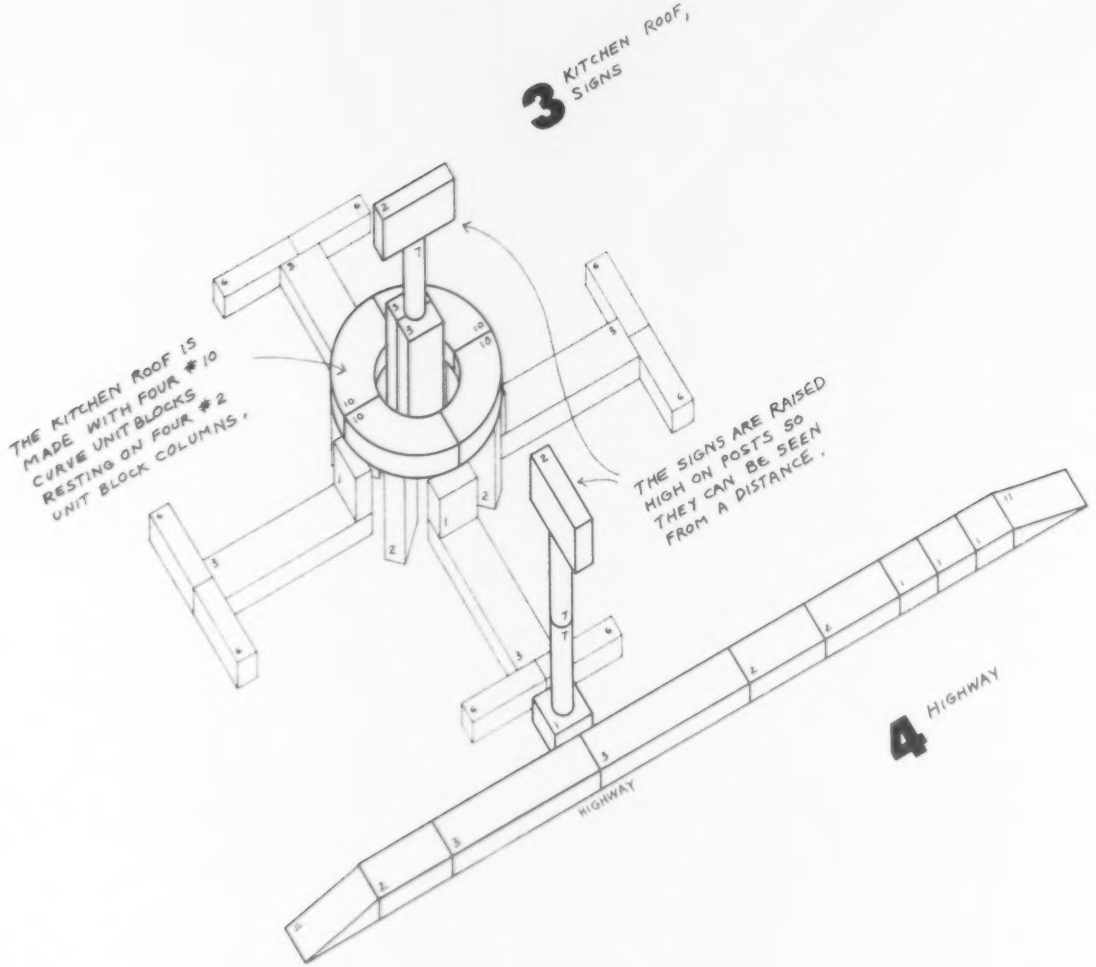
2 KITCHEN WALLS

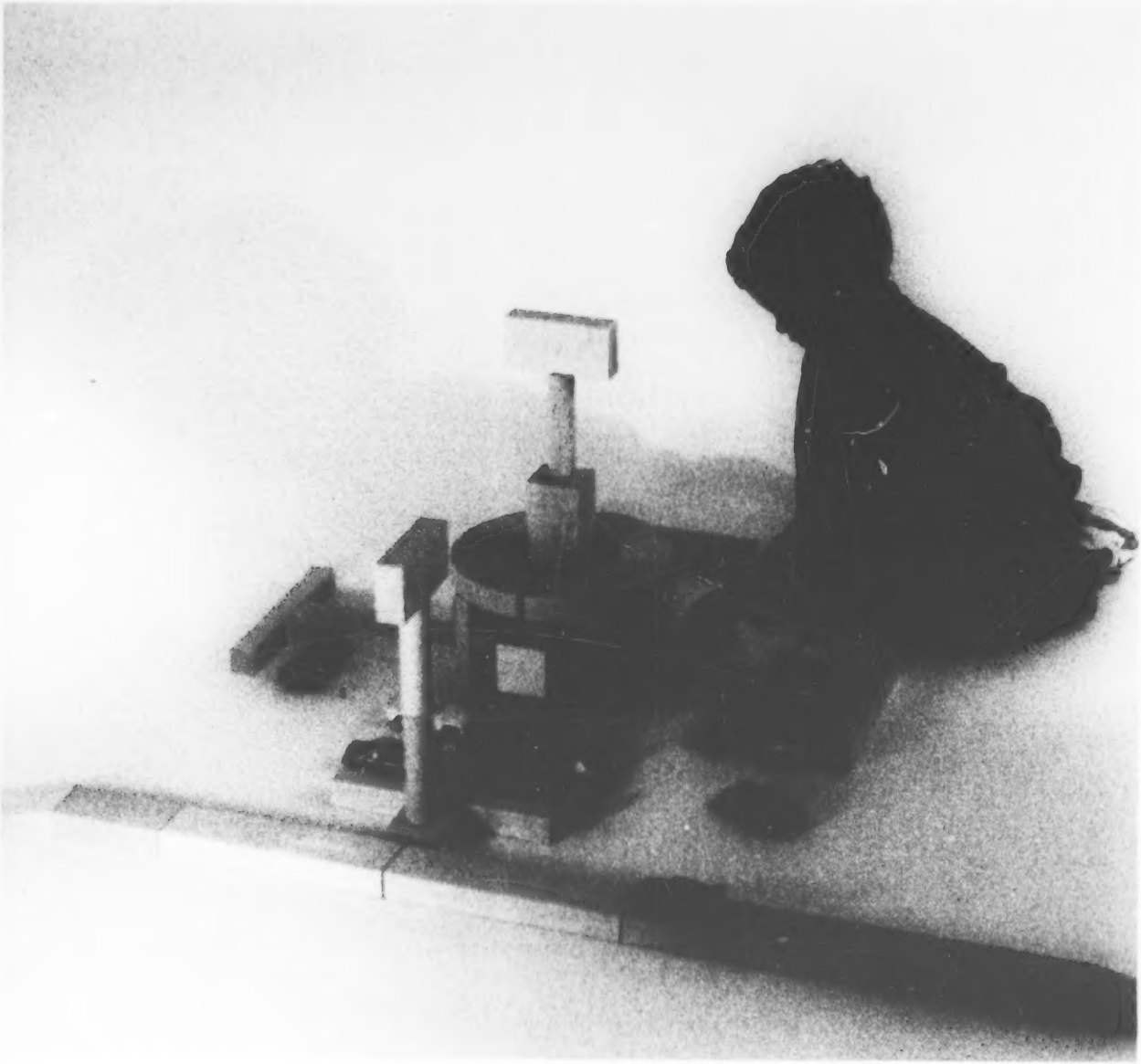


78

Your restaurant is complete when you install the kitchen roof, build the signs, and finish the highway.

A necessary accessory is a few die-cast metal toy cars. They are a perfect size and will add realism to this block project. This diner is called "EAT," but you can name yours anything you'd like.


3 KITCHEN ROOF, SIGNS
THE KITCHEN ROOF IS MADE WITH FOUR CURVE UNIT BLOCKS RESTING ON FOUR #2 UNIT BLOCK COLUMNS.
THE SIGNS ARE RAISED HIGH ON POSTS SO THEY CAN BE SEEN FROM A DISTANCE.
4 HIGHWAY
HIGHWAY



80

GREAT CIVIC STRUCTURES

This grouping of structures includes the four most well known of the largest building types in the world devoted to public use. Three of them, the bridge, the train station, and the airport, evolved as people began to travel by car, train, and airplane. The romance and adventure of travel have always ranked these structures among the most exciting in the world. The skyscraper, another American icon, developed at the turn of the twentieth century primarily due to the invention of the steel frame and the elevator. It is one of the most thrilling projects in the book to build because a sudden gust of wind, or other natural or unnatural phenomenon, at any moment might cause the skyscraper to crash, creating a certain air of excitement during construction.

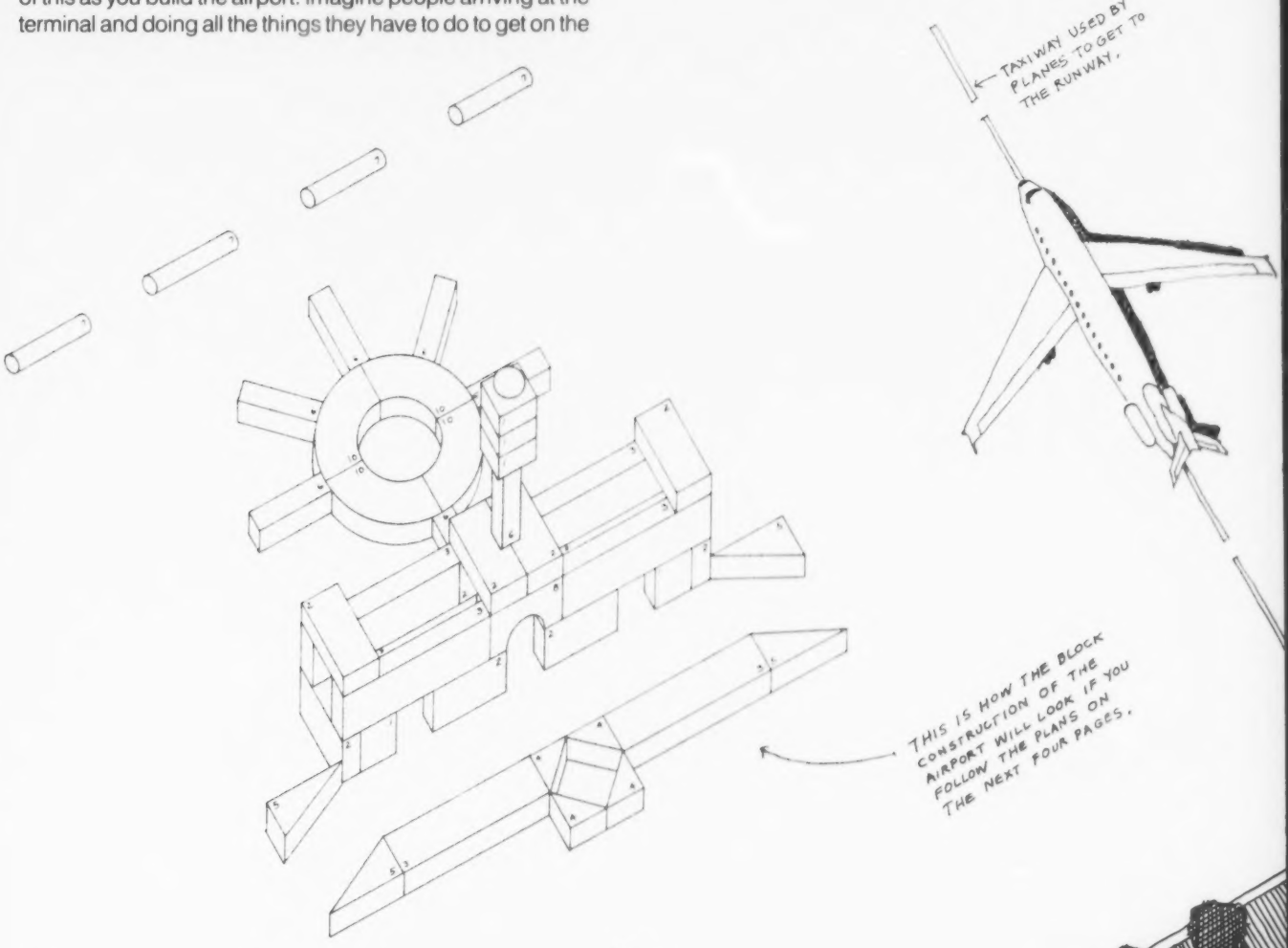
page 86 Airport
page 92 Bridge
page 98 Train Station
page 104 Skyscraper

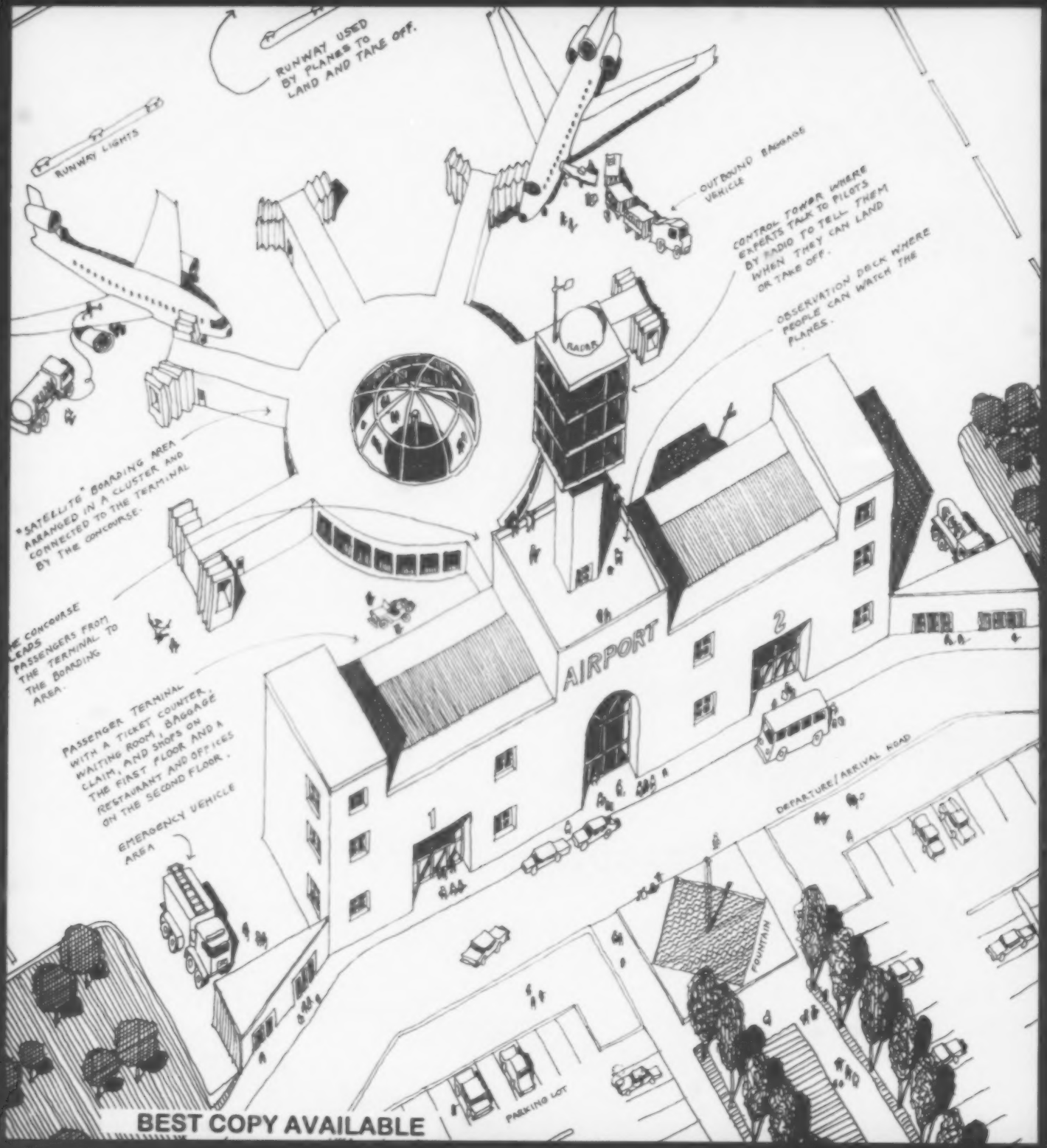
AIRPORT

The earliest airport began as nothing more than a small shed and a flat, open field where planes could land and take off. After World War II, commercial aviation began to develop rapidly, and airports were built in practically every major city in the world.

The airport's job is to transfer people from ground transportation (cars, buses, taxis, and trains) to air transportation (planes), and vice versa, as quickly as possible. Think of this as you build the airport. Imagine people arriving at the terminal and doing all the things they have to do to get on the airplane. They must park their car, buy a ticket, and so on. It's your job, as an architect, to build a structure that makes all these tasks easy.

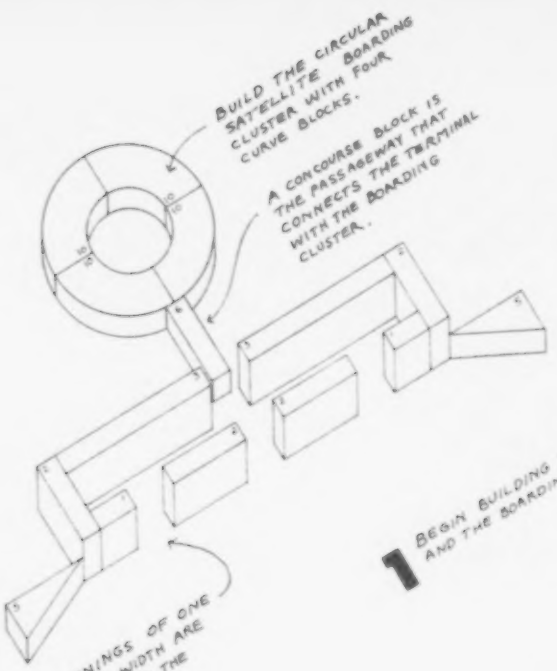
Imagine flying out of an airport on a clear sunny day and how thrilling it would be looking at the world below as it gets smaller and smaller as you go higher and higher.


TAXIWAY USED BY PLANES TO GET TO THE RUNWAY.
THIS IS HOW THE BLOCK CONSTRUCTION OF THE AIRPORT WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.


RUNWAY USED BY PLANES TO LAND AND TAKE OFF.
RUNWAY LIGHTS
OUTBOUND BAGGAGE VEHICLE
CONTROL TOWER WHERE EXPERTS TALK TO PILOTS BY RADIO TO TELL THEM WHEN THEY CAN LAND OR TAKE OFF.
OBSERVATION DECK WHERE PEOPLE CAN WATCH THE PLANES.
RADAR
"SATELLITE" BOARDING AREA ARRANGED IN A CLUSTER AND CONNECTED TO THE TERMINAL BY THE CONCOURSE.
CONCOURSE LEADS PASSENGERS FROM THE TERMINAL TO THE BOARDING AREA.
PASSENGER TERMINAL WITH A TICKET COUNTER, WAITING ROOM, BAGGAGE CLAIM, AND SHOPS ON THE FIRST FLOOR AND A RESTAURANT AND OFFICES ON THE SECOND FLOOR.
EMERGENCY VEHICLE AREA
AIRPORT
1
2
DEPARTURE/ARRIVAL ROAD
FOUNTAIN
PARKING LOT

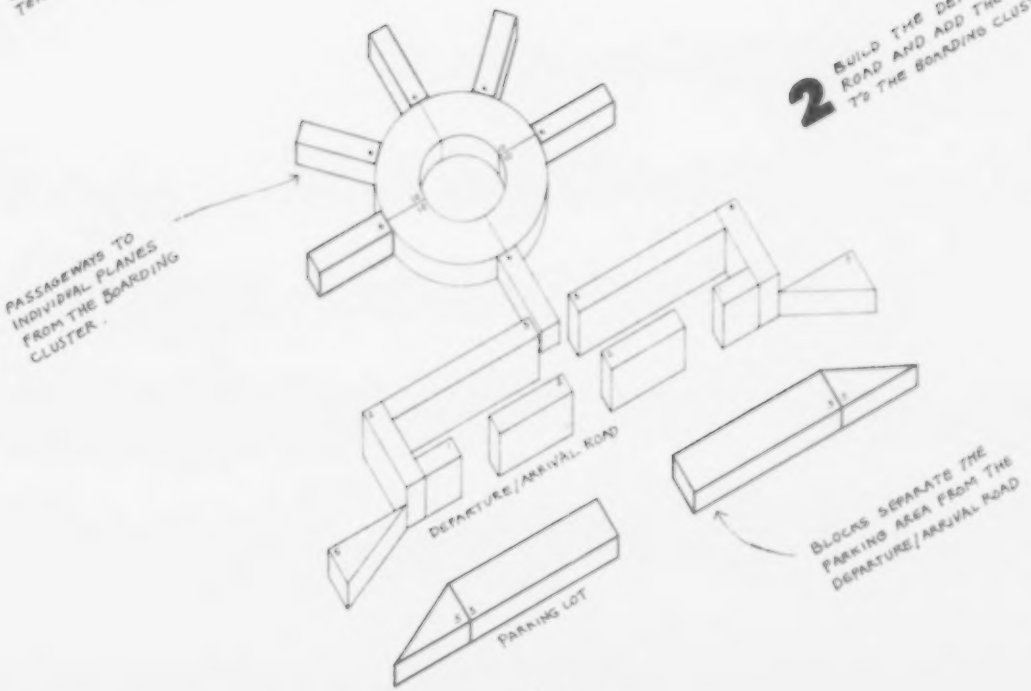
BEST COPY AVAILABLE

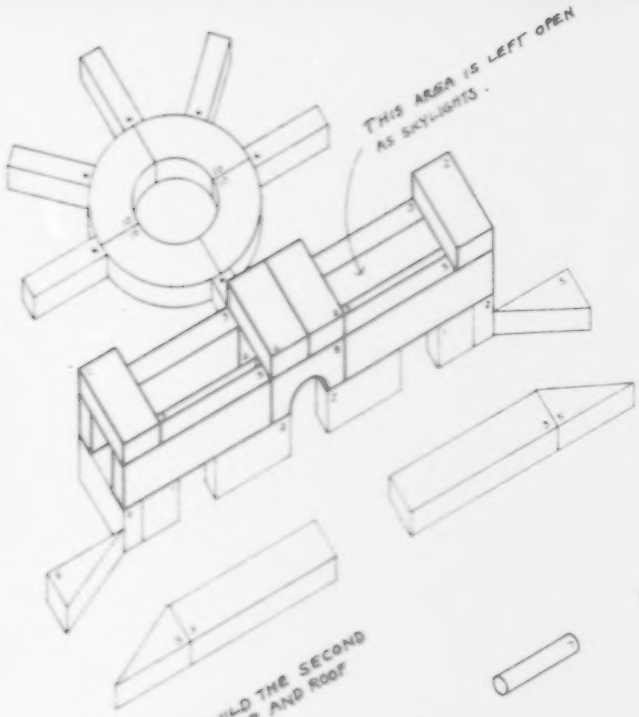
The first job in building the block airport is to build the first floor of the passenger terminal, the satellite boarding area, and the connecting concourse. Make sure you allow enough room around the structure for a runway for the planes and for a large parking area.


BUILD THE CIRCULAR SATELLITE BOARDING CLUSTER WITH FOUR CURVE BLOCKS.
A CONCOURSE BLOCK IS THE PASSAGEWAY THAT CONNECTS THE TERMINAL WITH THE BOARDING CLUSTER.
OPENINGS OF ONE BLOCK WIDTH ARE ENTRYS TO THE TERMINAL.

1 BEGIN BUILDING THE TERMINAL AND THE BOARDING CLUSTER

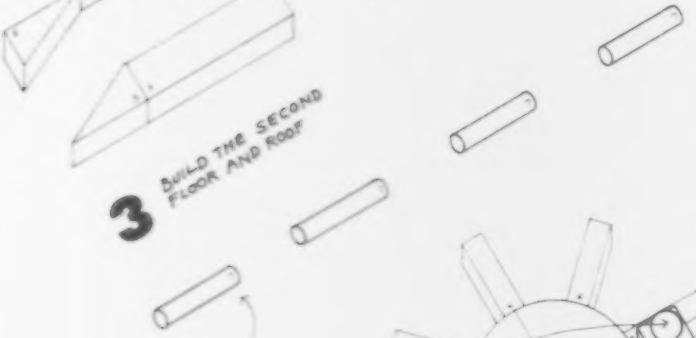
2 BUILD THE DEPARTURE / ARRIVAL ROAD AND ADD THE PASSAGEWAYS TO THE BOARDING CLUSTER


PASSAGEWAYS TO INDIVIDUAL PLANES FROM THE BOARDING CLUSTER.
DEPARTURE/ARRIVAL ROAD
BLOCKS SEPARATE THE PARKING AREA FROM THE DEPARTURE/ARRIVAL ROAD
PARKING LOT



Complete the airport by finishing the terminal building and control tower. If you have enough blocks, you can add another satellite cluster boarding area connected to the block terminal area with a new concourse block. This is one way that some airports expand when they need to serve more airplanes and passengers.

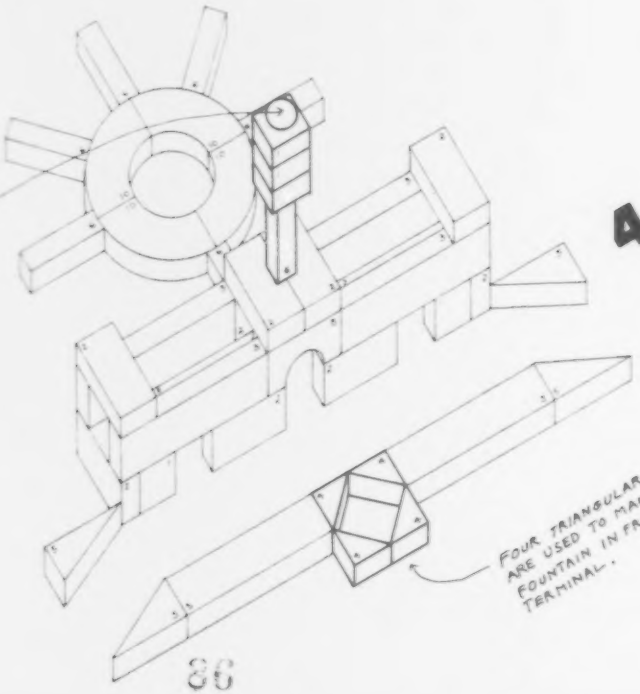
3 BUILD THE SECOND FLOOR AND ROOF



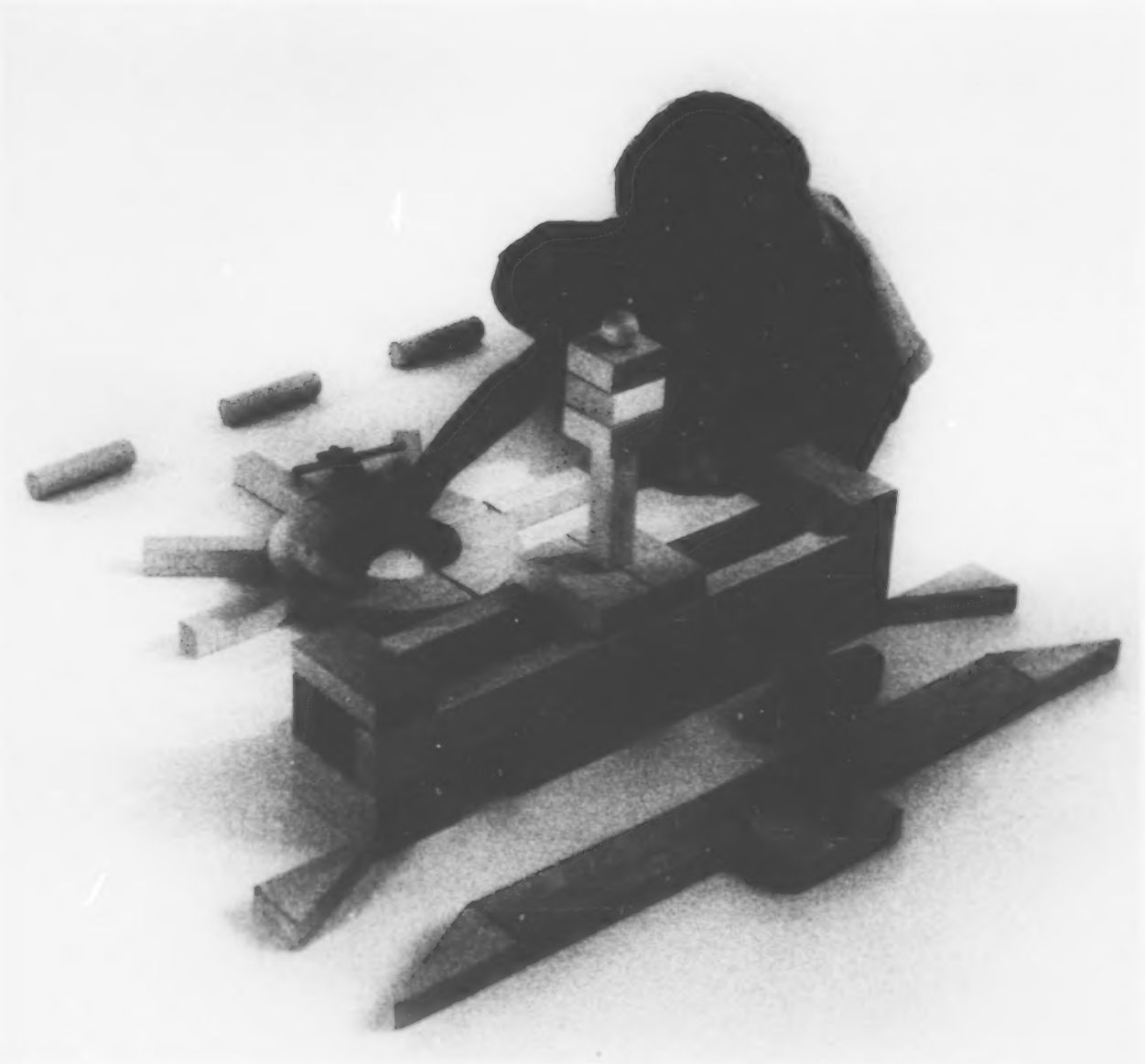
ADD THE RUNWAY LIGHT BLOCKS THAT DETERMINE THE LOCATION OF THE RUNWAY.

A SPHERICAL ACCESSORY BLOCK IS USED FOR RADAR ON TOP OF THE CONTROL TOWER. IF YOU DON'T HAVE THIS BLOCK, JUST PRETEND.

4 ADD THE CONTROL TOWER AND FOUNTAIN



FOUR TRIANGULAR BLOCKS ARE USED TO MAKE A WATER FOUNTAIN IN FRONT OF THE TERMINAL.



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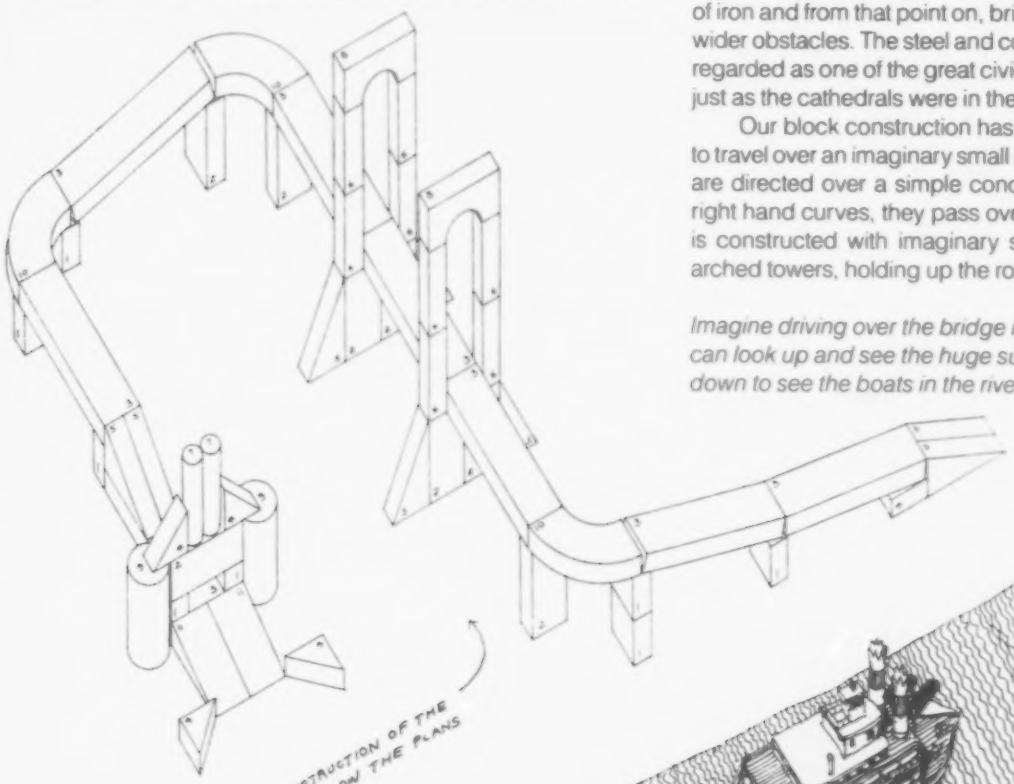
BRIDGE

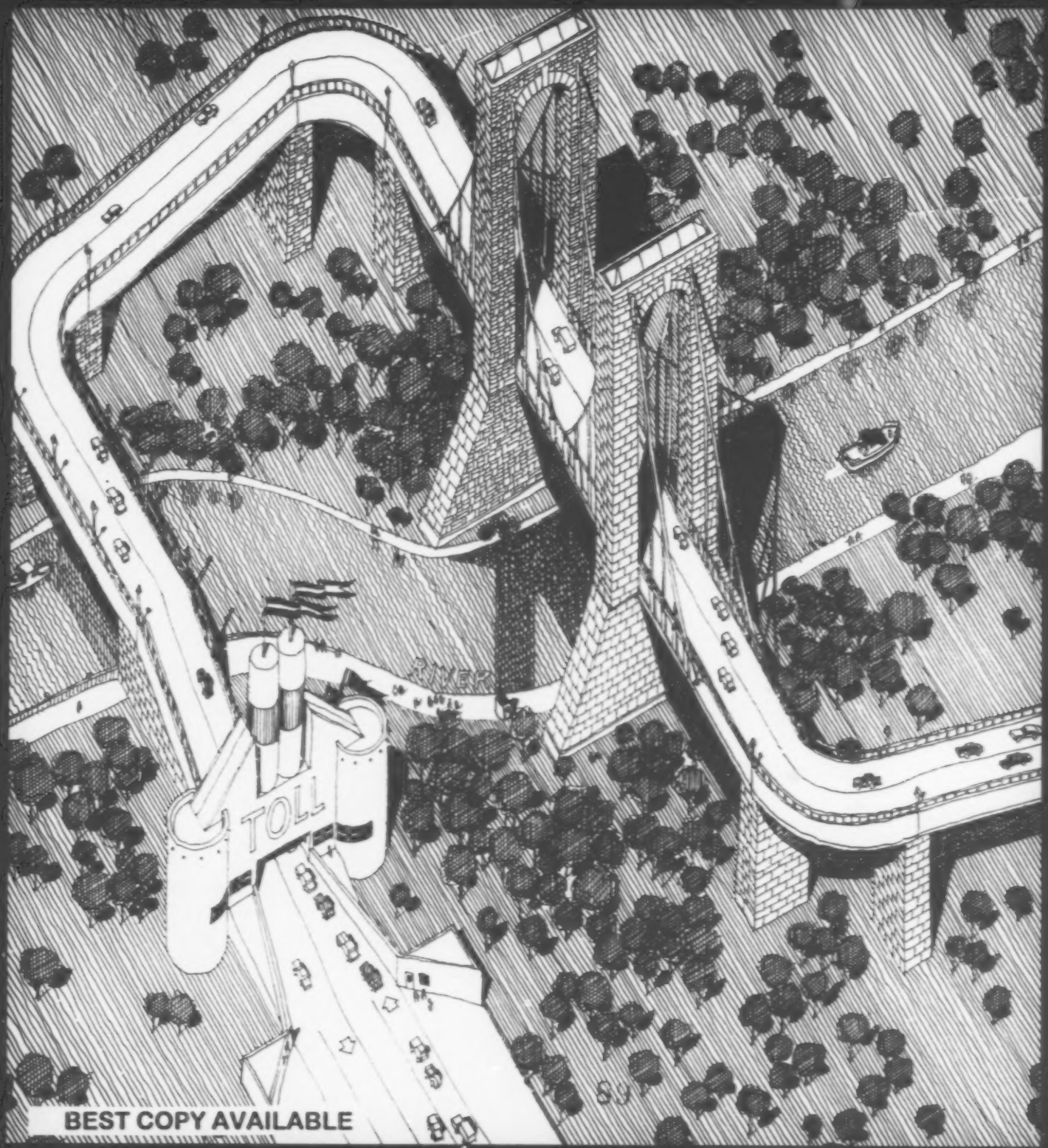
Bridges have been built ever since man recognized a need to cross *over* an obstacle, like a river or a stream. The first bridge was probably a simple log laid across a stream to provide easy walking access from one side to the other. As time passed, bridges became powerful symbols of man's ability to build. Bridges have always been the product of a culture's latest technology designed by the best thinkers or engineers of the time. The early wooden and stone constructions of pre-industrial times were wonderful expressions of the nature of each material. The covered wood bridges built in New England in the eighteenth and nineteenth centuries and some stone bridges built by the Romans in the third and fourth centuries are still in use. In the early nineteenth century, the English perfected bridges built of iron and from that point on, bridges grew larger, spanning wider obstacles. The steel and concrete bridges of today are regarded as one of the great civic achievements of our time, just as the cathedrals were in the Middle Ages.

Our block construction has two bridges that allow cars to travel over an imaginary small river. After paying a toll, cars are directed over a simple concrete bridge, then after two right hand curves, they pass over a suspension bridge that is constructed with imaginary steel cables hung from tall arched towers, holding up the road surface.

Imagine driving over the bridge in a convertible so that you can look up and see the huge supporting structure and down to see the boats in the river.



THIS IS HOW THE BLOCK CONSTRUCTION OF THE BRIDGE WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.



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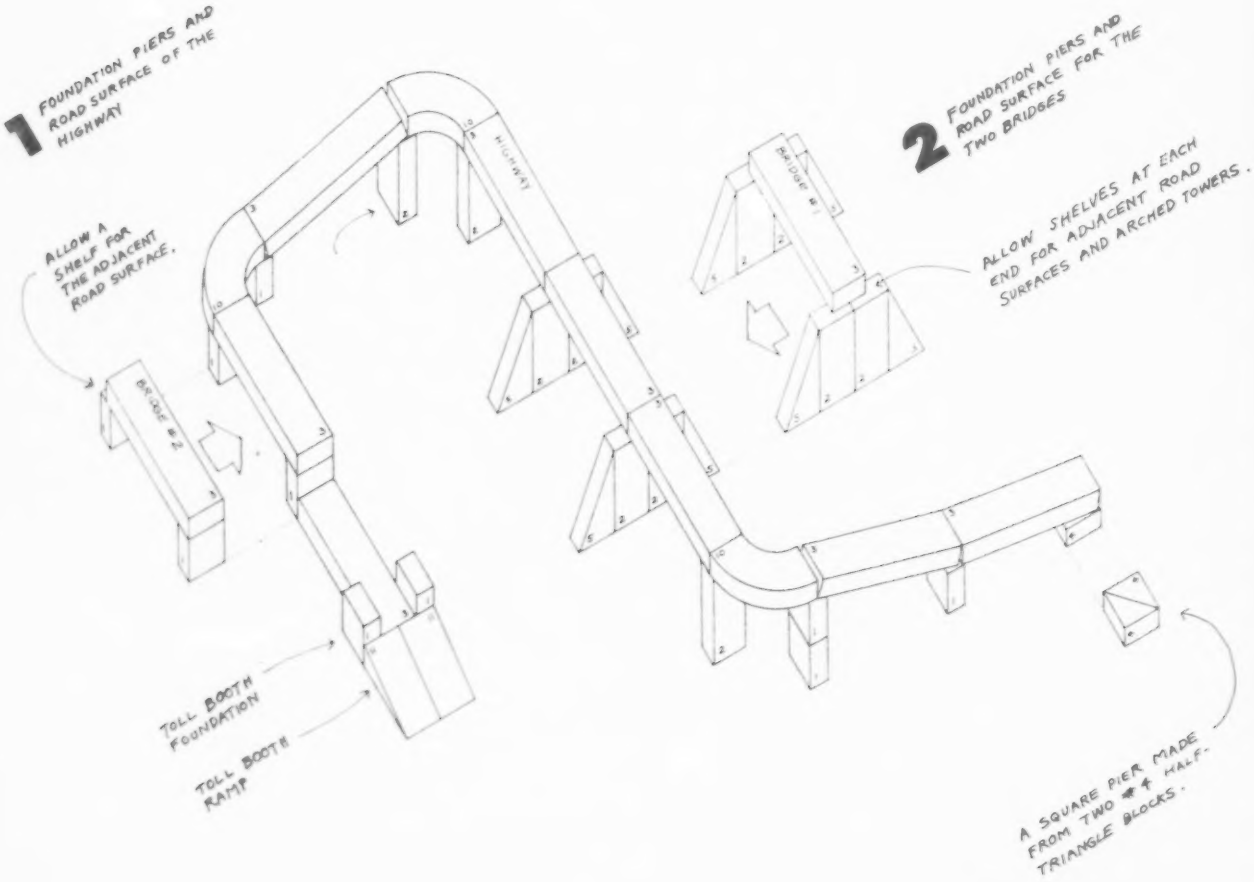
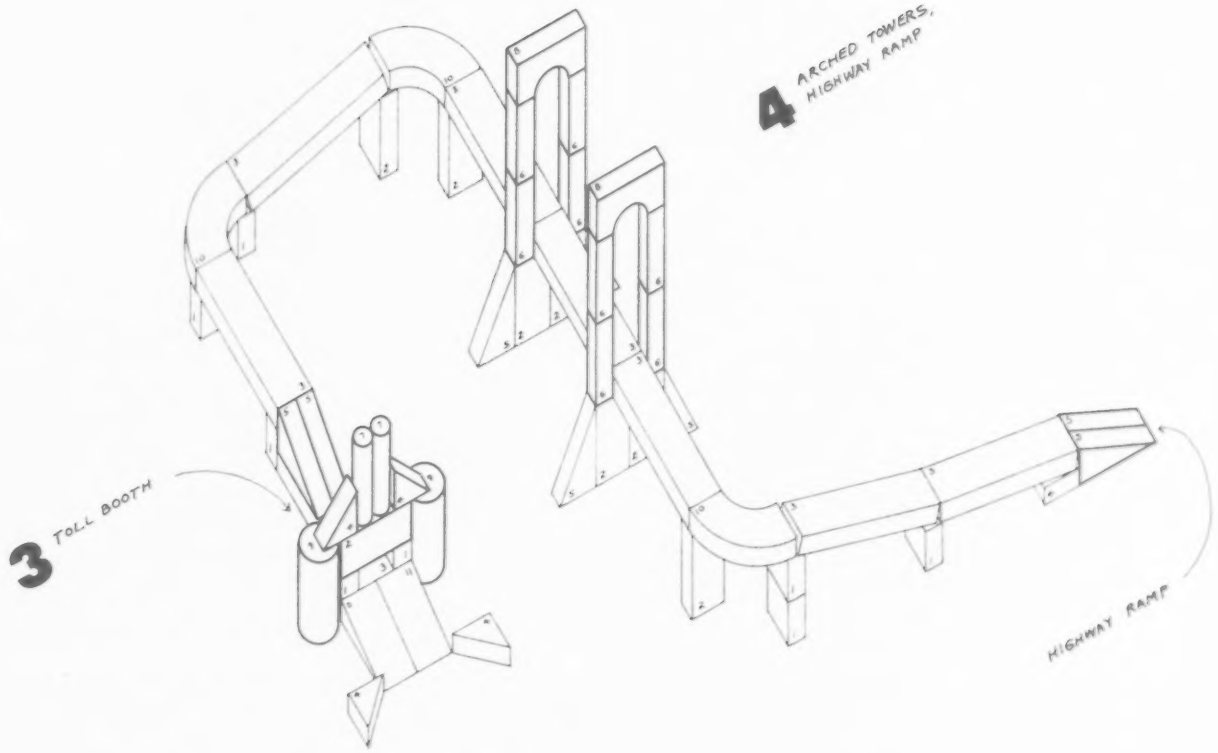
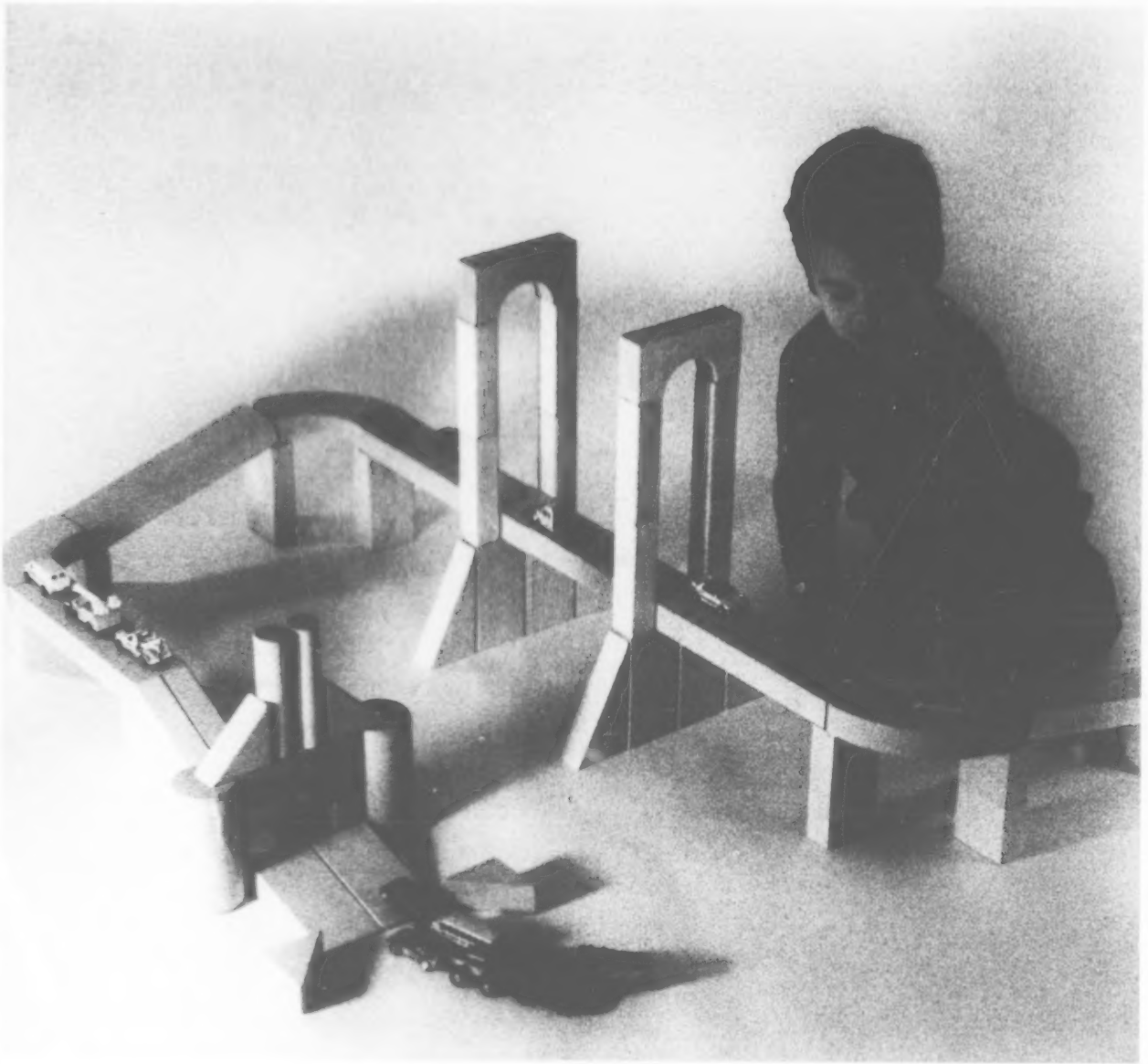
First, the two bridges are constructed with their foundation piers supporting their road surfaces. Then, the rest of the highway system is built by extending the road surface with more blocks, and placing a foundation pier under its end to support it. After you get used to this type of construction (see page 36 for post and beam block building technique), you can snake the roadway all around your room and place the bridges where you like.


1 FOUNDATION PIERS AND ROAD SURFACE OF THE HIGHWAY
2 FOUNDATION PIERS AND ROAD SURFACE FOR THE TWO BRIDGES
ALLOW A SHELF FOR THE ADJACENT ROAD SURFACE.
ALLOW SHELVES AT EACH END FOR ADJACENT ROAD SURFACES AND ARCHED TOWERS.
HIGHWAY
BRIDGE #1
BRIDGE #2
TOLL BOOTH FOUNDATION
TOLL BOOTH RAMP
A SQUARE PIER MADE FROM TWO # 4 HALF-TRIANGLE BLOCKS.

S1

The bridge/highway complex is completed when the arched towers—used to support the imaginary cables that hold up the roadway—and the toll booth are built. Die-cast metal cars (about 3″ long) are a necessary accessory for this project.





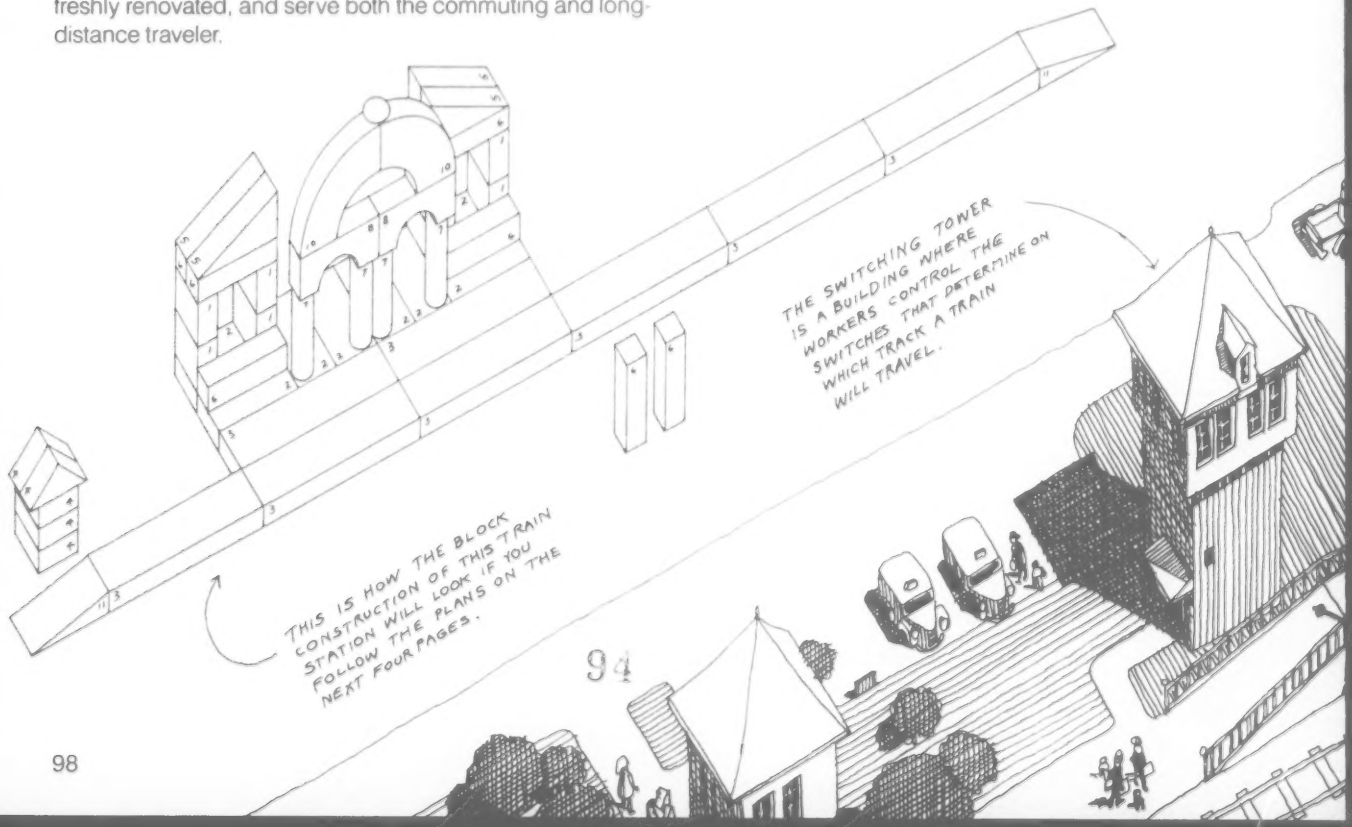
TRAIN STATION

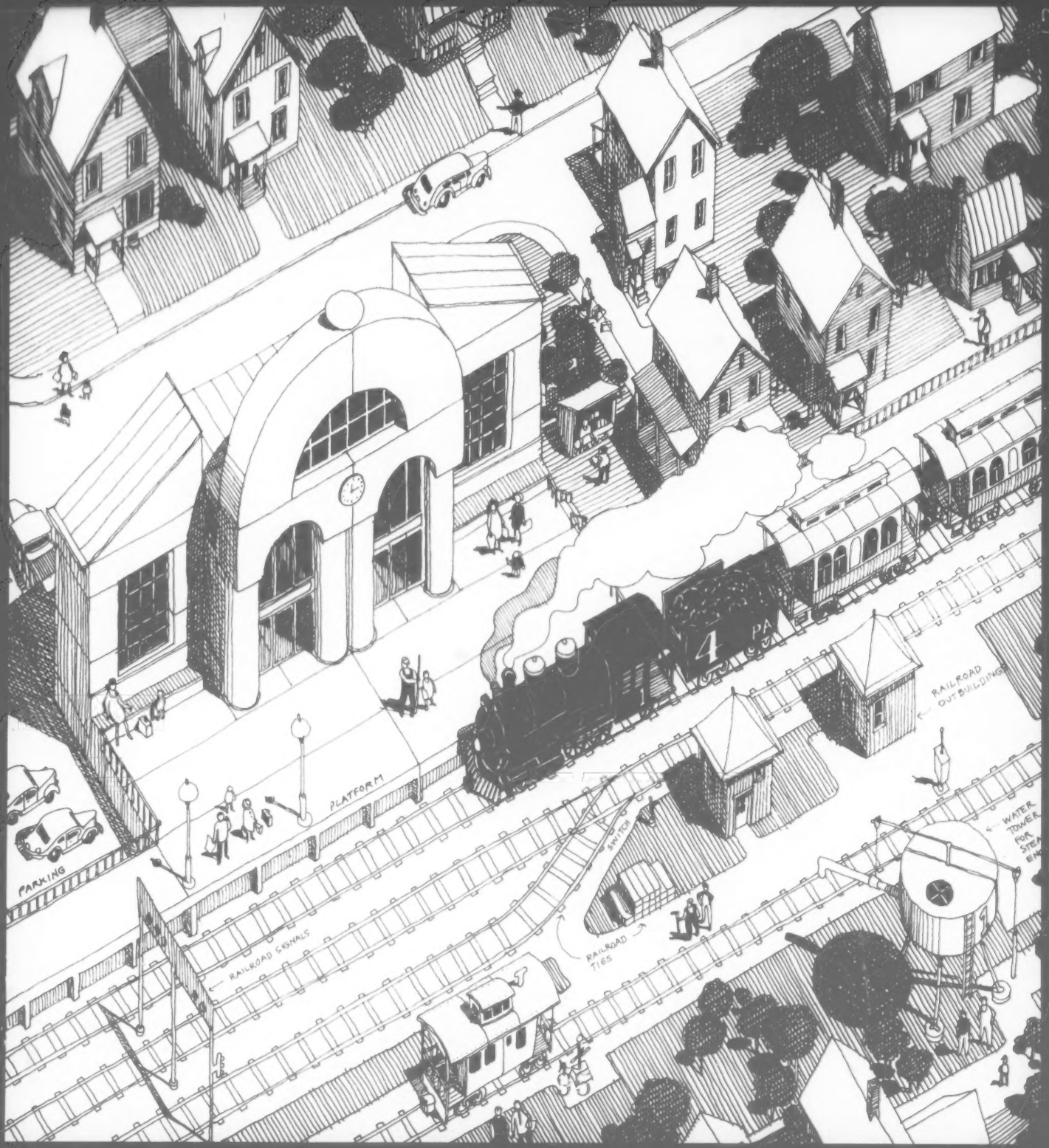
In the early 1800s, when train travel began, there were *no* train stations. Tickets were sold in hotels and other businesses, and when the train pulled into town, the people boarded right from the street. As train travel became increasingly popular in the mid-1800s, train stations were built in towns and cities throughout the world. Train stations became gathering places, a kind of social center, for smaller communities where the building simply housed a waiting room and a ticket booth. Train stations built in large cities often became spectacular grand gateways where they usually had a high vaulted ceiling. They were constructed and decorated by the best craftsmen of the day and housed shops, waiting spaces, banks of ticket booths, and even hotels in the same building.

Only a few significant train stations have been built in the world in the past fifty years because car, air, and bus travel have become so popular. But those "grand gateways" to the big cities still stand proud, many of them freshly renovated, and serve both the commuting and long-distance traveler.

Our train station is set in a medium sized American tow in the 1930s when train travel had reached its peak. We' included a ticket booth, a waiting room, and a snack ar newspaper shop.

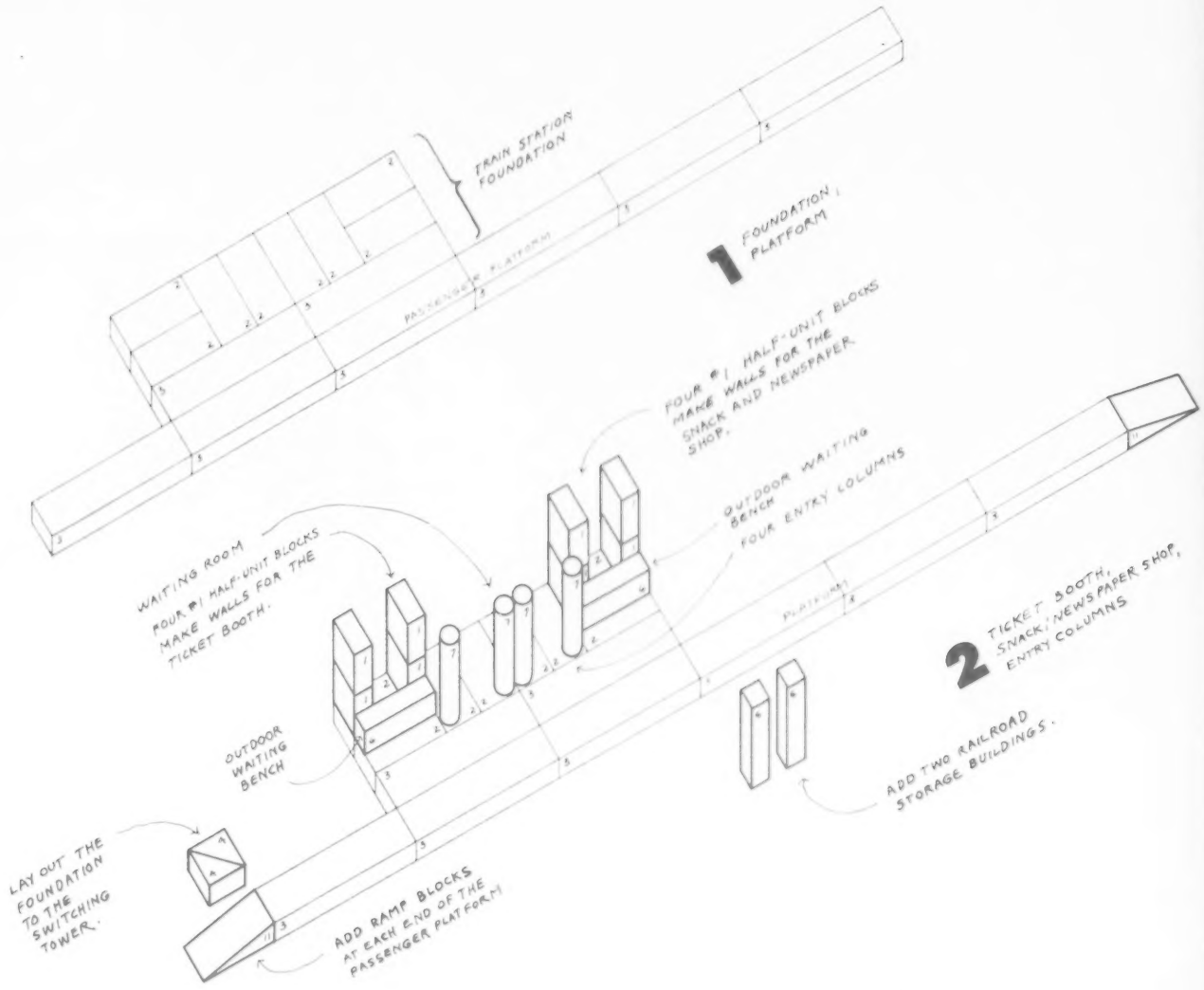
Imagine living in the early twentieth century when there were very few cars and buses, mostly just trains to get around in. Imagine traveling on a steam-powered train, eating and sleeping on board, to visit a friend in a far-away city.


THIS IS HOW THE BLOCK CONSTRUCTION OF THIS TRAIN STATION WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.
THE SWITCHING TOWER IS A BUILDING WHERE WORKERS CONTROL THE SWITCHES THAT DETERMINE ON WHICH TRACK A TRAIN WILL TRAVEL.
94


4
PA
PLATFORM
PARKING
RAILROAD SIGNALS
SWITCH
RAILROAD TIES
RAILROAD OUTBUILDING
WATER TOWER FOR STEAM ENGINES

Begin constructing the train station by laying out the foundation for the building and the passenger platform.

After you have completed this step, add the walls for the ticket booth on the left side of the building, and the walls for the snack and newspaper shop on the right side of the building. Then carefully place the four columns that frame the entryway to the waiting room.


TRAIN STATION FOUNDATION
1 FOUNDATION; PLATFORM
FOUR #1 HALF-UNIT BLOCKS MAKE WALLS FOR THE SNACK AND NEWSPAPER SHOP.
OUTDOOR WAITING BENCH
FOUR ENTRY COLUMNS
WAITING ROOM
FOUR #1 HALF-UNIT BLOCKS MAKE WALLS FOR THE TICKET BOOTH.
2 TICKET BOOTH, SNACK/NEWSPAPER SHOP, ENTRY COLUMNS
OUTDOOR WAITING BENCH
ADD TWO RAILROAD STORAGE BUILDINGS.
LAY OUT THE FOUNDATION TO THE SWITCHING TOWER.
ADD RAMP BLOCKS AT EACH END OF THE PASSENGER PLATFORM

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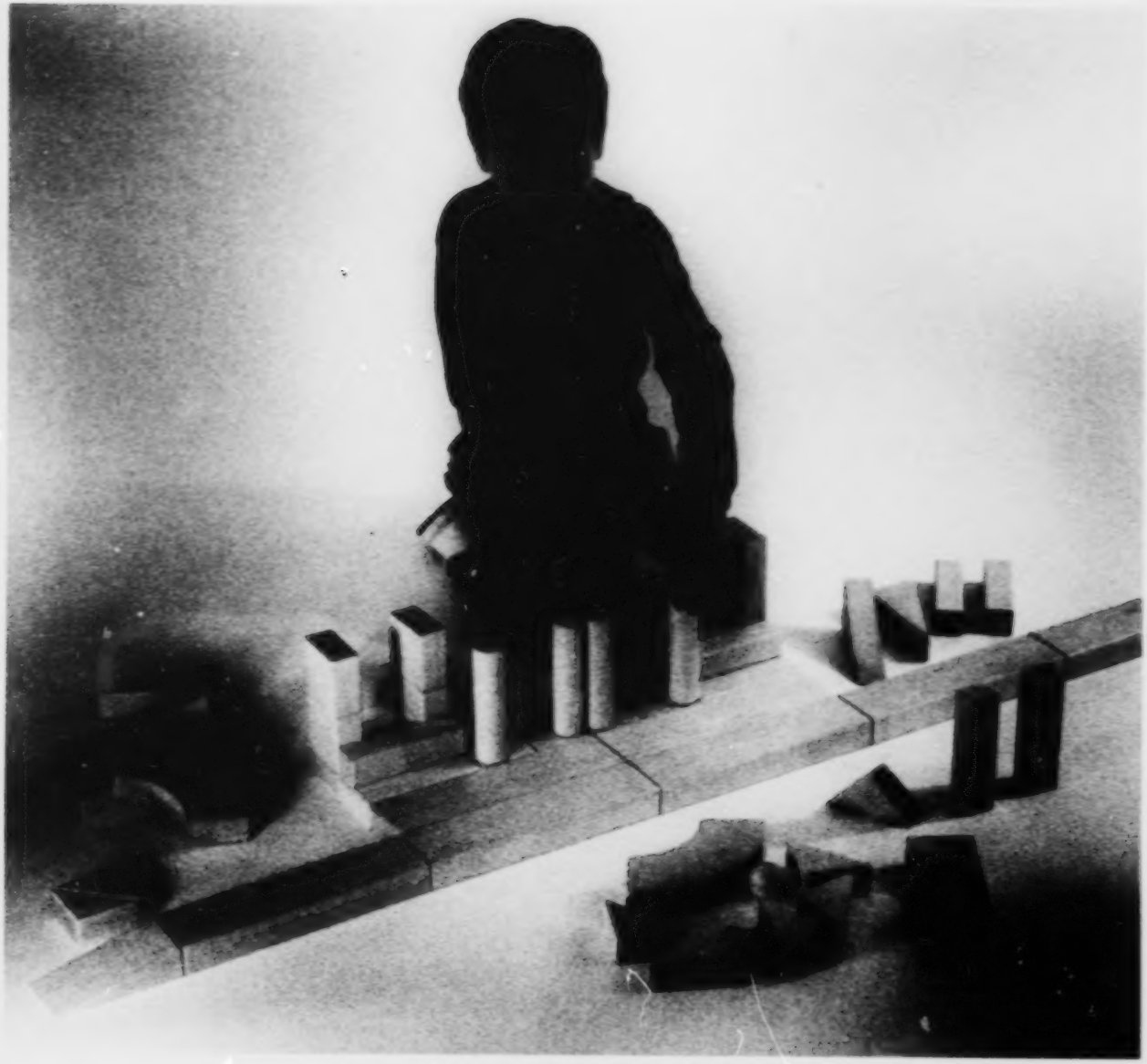

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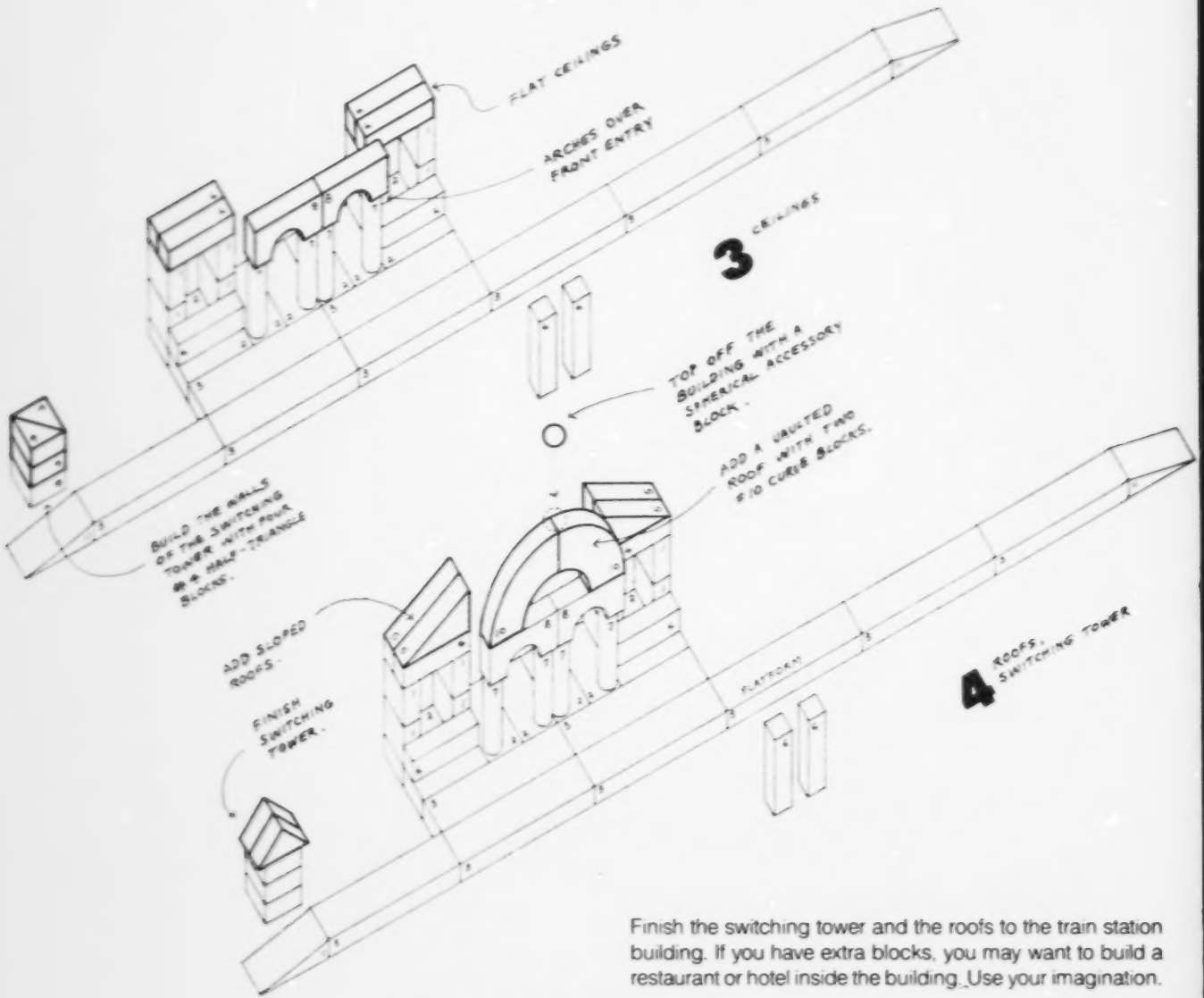
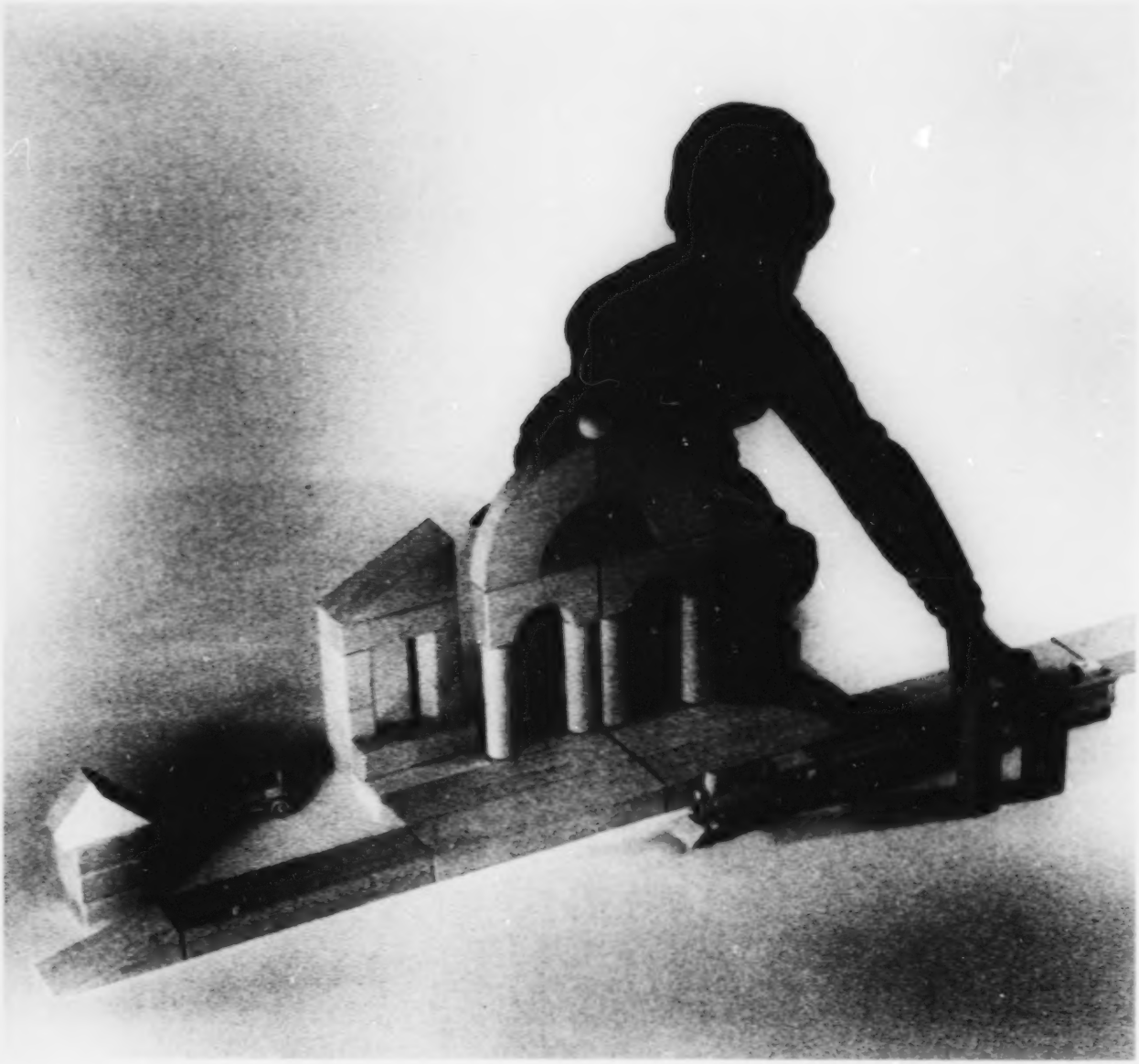
Add the flat ceilings over the ticket booth and the snack and newspaper shop, and build the arches over the entry doors.


FLAT CEILINGS
ARCHES OVER FRONT ENTRY
3
CEILINGS
TOP OFF THE BUILDING WITH A SPHERICAL ACCESSORY BLOCK.
ADD A VAULTED ROOF WITH TWO #10 CURVE BLOCKS.
BUILD THE WALLS OF THE SWITCHING TOWER WITH FOUR #4 HALF-TRIANGLE BLOCKS.
ADD SLOPED ROOFS.
FINISH SWITCHING TOWER.
PLATFORM
4
ROOFS, SWITCHING TOWER

Finish the switching tower and the roofs to the train station building. If you have extra blocks, you may want to build a restaurant or hotel inside the building. Use your imagination.



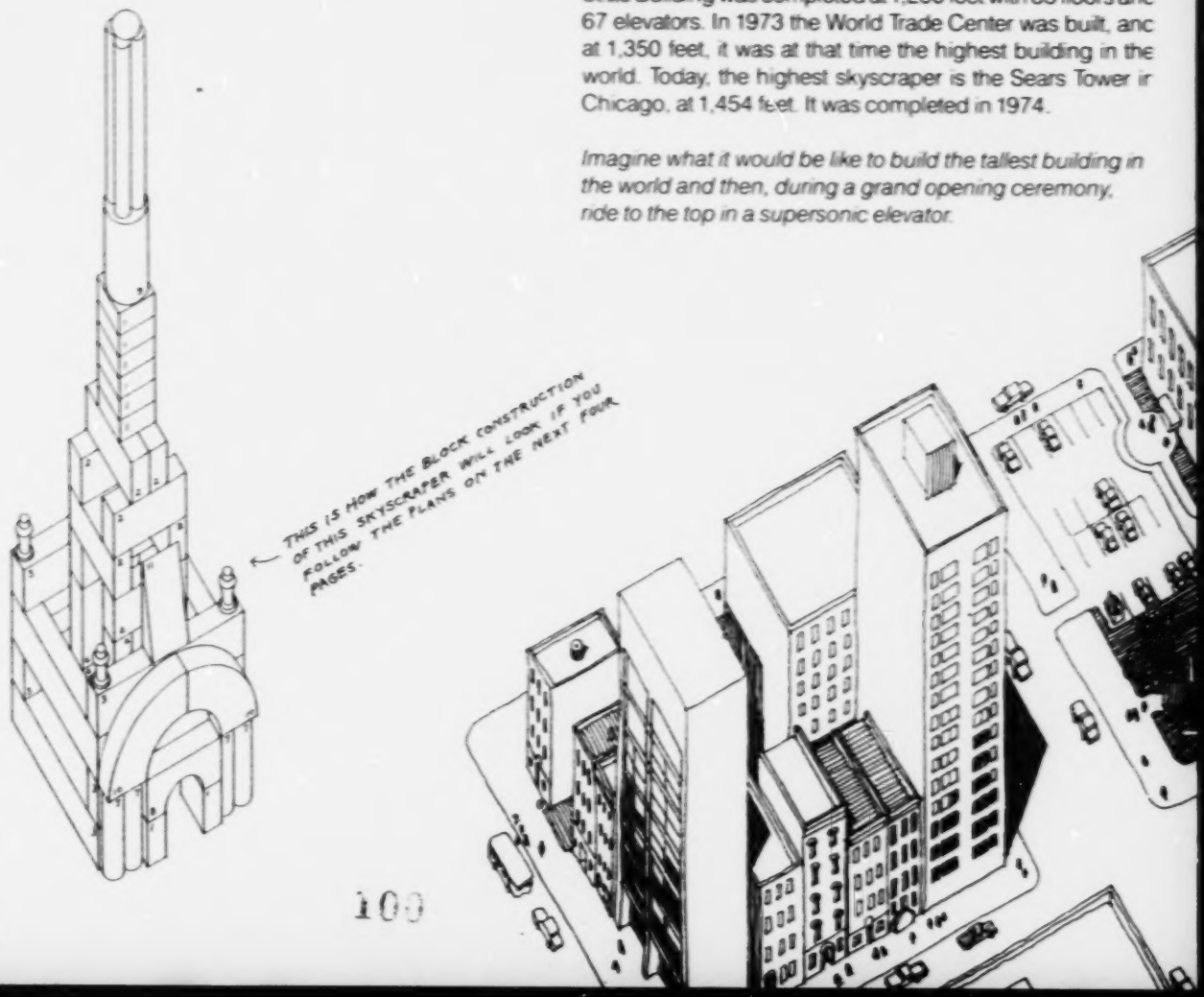
SKYSCRAPER

Skyscrapers are very tall, many-storied buildings constructed on a steel skeleton with high-speed elevators used to transport people and goods from bottom to top.

The term "skyscraper," used to describe an extraordinarily high building that seems to scrape the sky, originated in the late 1880s when New York office buildings had reached the height of ten to twelve stories. Land had become so scarce and expensive in the city that the only direction to build was up. But, building any higher than twelve stories was impossible with traditional building materials such as wood, stone and brick and impractical because office workers could only climb so many stairs to their offices.

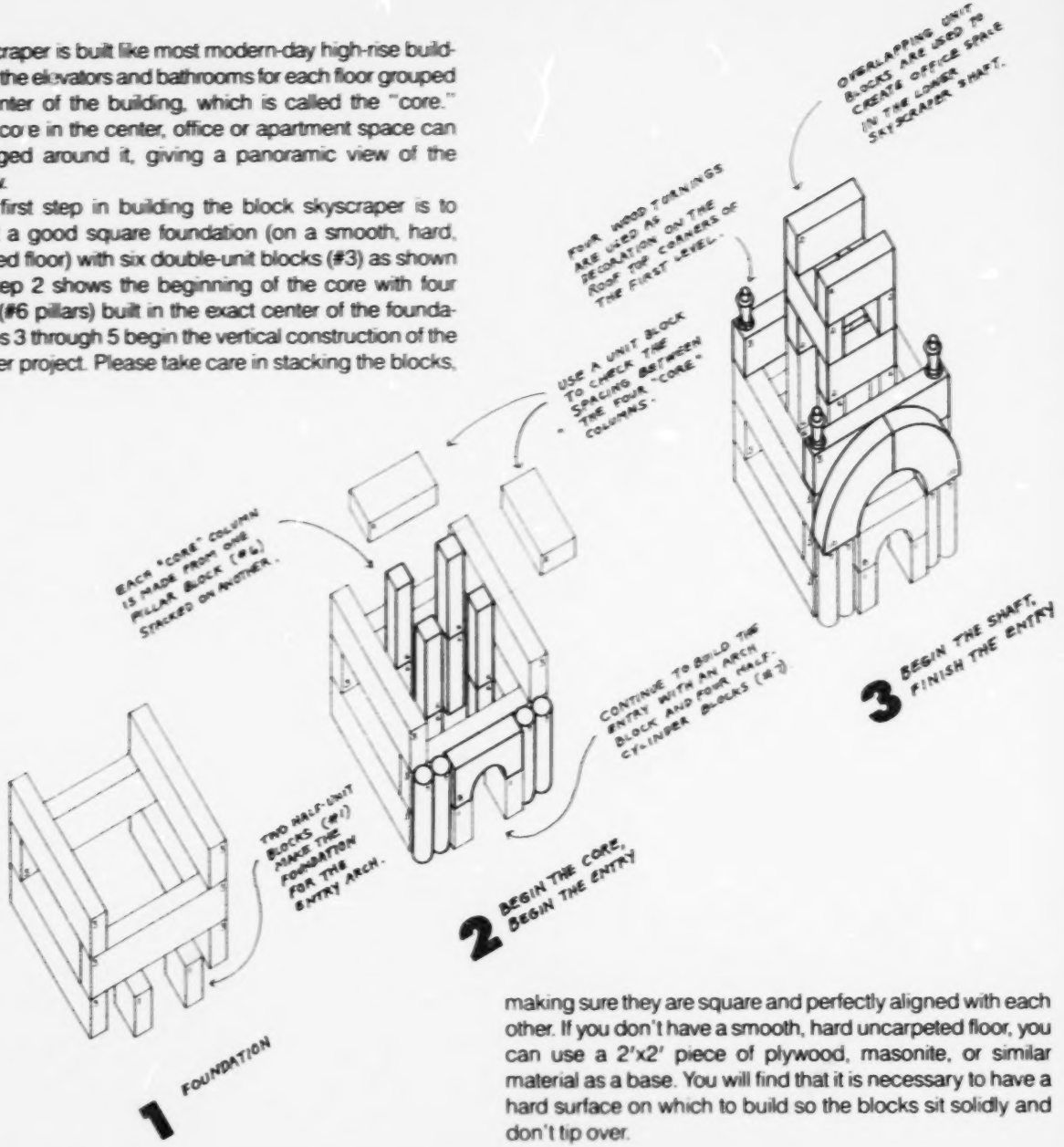
With the invention of the elevator, it became very easy to transport people vertically, and the development of the structural steel skeleton, beginning in Chicago in 1883, allowed buildings to grow to amazing heights. By the end of World War I, the Woolworth Building in New York City had been built to a height of 792 feet, and in 1932, the Empire State Building was completed at 1,250 feet with 85 floors and 67 elevators. In 1973 the World Trade Center was built, and at 1,350 feet, it was at that time the highest building in the world. Today, the highest skyscraper is the Sears Tower in Chicago, at 1,454 feet. It was completed in 1974.

Imagine what it would be like to build the tallest building in the world and then, during a grand opening ceremony, ride to the top in a supersonic elevator.



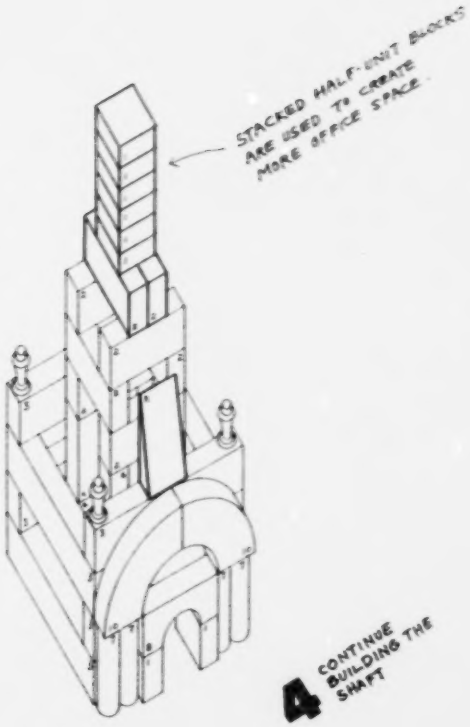
Our skyscraper is built like most modern-day high-rise buildings, with the elevators and bathrooms for each floor grouped in the center of the building, which is called the "core." With this core in the center, office or apartment space can be arranged around it, giving a panoramic view of the city below.

The first step in building the block skyscraper is to construct a good square foundation (on a smooth, hard, uncarpeted floor) with six double-unit blocks (#3) as shown below. Step 2 shows the beginning of the core with four columns (#6 pillars) built in the exact center of the foundation. Steps 3 through 5 begin the vertical construction of the skyscraper project. Please take care in stacking the blocks,

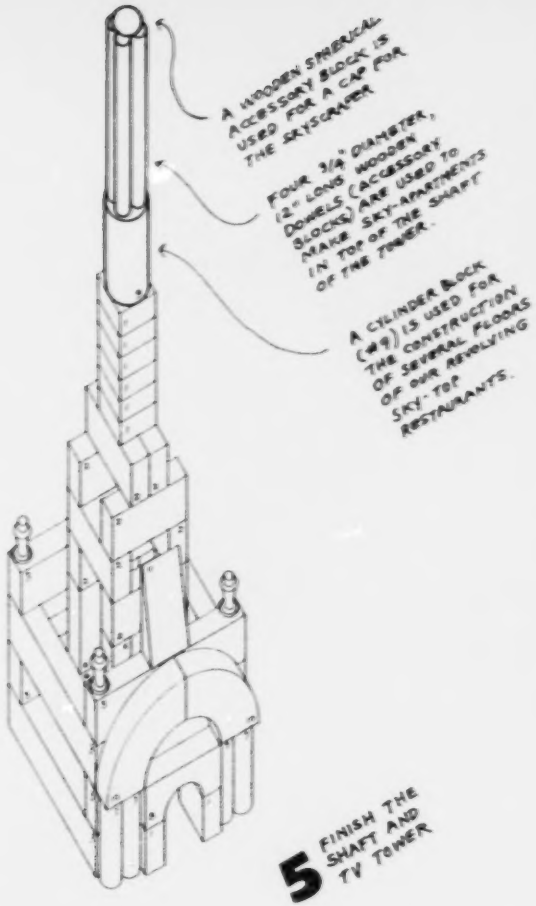

OVERLAPPING UNIT BLOCKS ARE USED TO CREATE OFFICE SPACE IN THE LOWER SKYSCRAPER SHAFT.
FOUR WOOD TURNINGS ARE USED AS DECORATION ON THE ROOF TOP CORNERS OF THE FIRST LEVEL.
USE A UNIT BLOCK TO CHECK THE SPACING BETWEEN THE FOUR "CORE" COLUMNS.
EACH "CORE" COLUMN IS MADE FROM ONE PILLAR BLOCK (#6) STACKED ON ANOTHER.
CONTINUE TO BUILD THE ENTRY WITH AN ARCH BLOCK AND FOUR HALF-CYLINDER BLOCKS (#7)
TWO HALF-UNIT BLOCKS (#1) MAKE THE FOUNDATION FOR THE ENTRY ARCH.
3 BEGIN THE SHAFT, FINISH THE ENTRY
2 BEGIN THE CORE, BEGIN THE ENTRY
1 FOUNDATION

making sure they are square and perfectly aligned with each other. If you don't have a smooth, hard uncarpeted floor, you can use a 2'x2' piece of plywood, masonite, or similar material as a base. You will find that it is necessary to have a hard surface on which to build so the blocks sit solidly and don't tip over.

Steps 4 and 5 show how the skyscraper is completed. Our skyscraper is relatively simple, so if the blocks are stacked properly, you should be rewarded with a beautiful high-rise building.



4 CONTINUE BUILDING THE SHAFT


A WOODEN SPHERICAL ACCESSORY BLOCK IS USED FOR A CAP FOR THE SKYSCRAPER.
FOUR 3/4" DIAMETER, 12" LONG WOODEN DOWELS (ACCESSORY BLOCKS) ARE USED TO MAKE SKY-APARTMENTS IN TOP OF THE SHAFT OF THE TOWER.
A CYLINDER BLOCK (#9) IS USED FOR THE CONSTRUCTION OF SEVERAL FLOORS OF OUR REVOLVING SKY-TOP RESTAURANTS.

5 FINISH THE SHAFT AND TV TOWER

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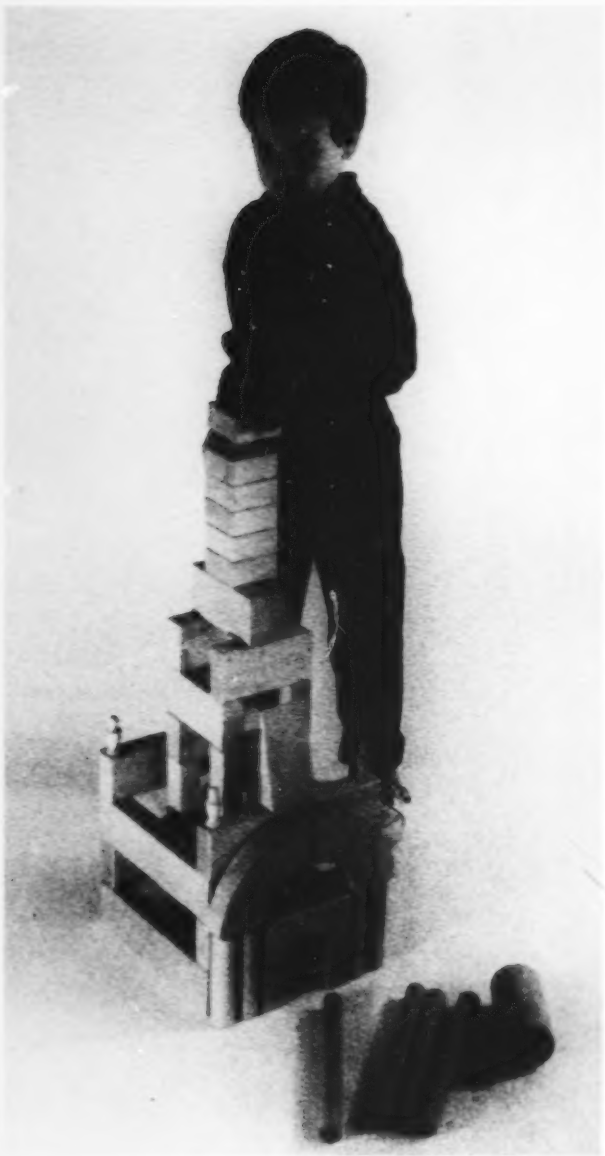

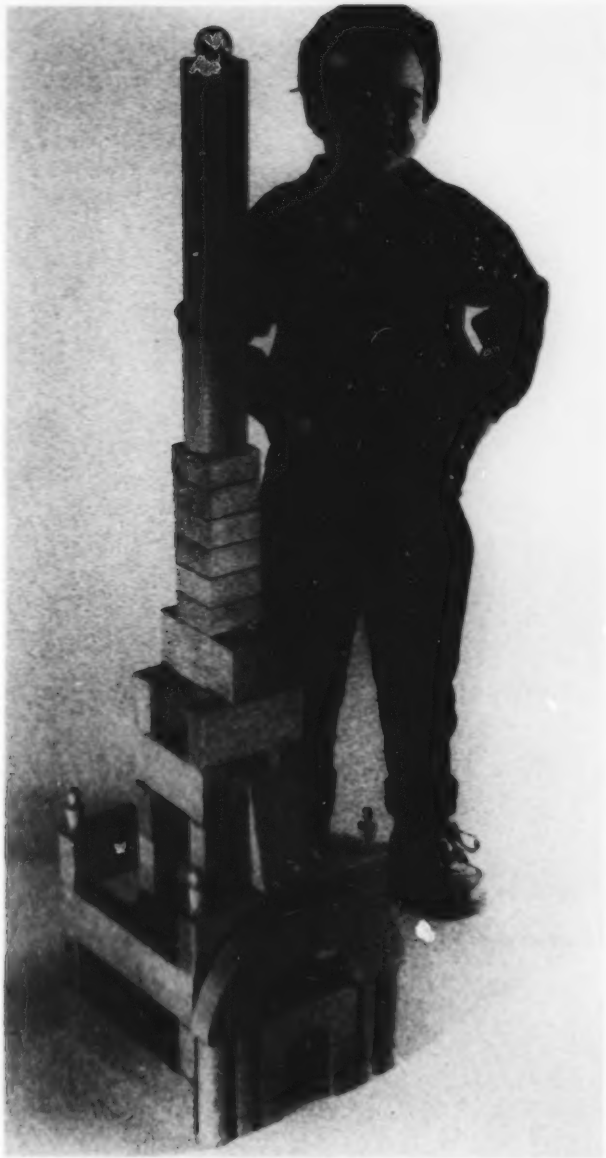

GREAT HISTORICAL STRUCTURES

This grouping of structures includes five of the most well-known buildings of all the buildings ever built throughout history. Greek temples, built as early as 500 B.C., have had a lasting effect on Western architecture because of the wonderful detailing that adorns their basic post and beam design. Synagogues are unique because they come in many forms—there is no one particular style, so you can build the one shown here or just use your imagination. Cathedrals built in many European cities and mosques built throughout the Middle East around the thirteenth century are among the most magnificent and awe-inspiring religious structures ever built. And, of course, we end with one building that has appealed to children more than any other, the castle, built all over Europe and Asia during medieval times. Some of these buildings took over one hundred years to construct, so you should try to be patient as you erect your great historical structures.

Plans for these five projects are illustrated on the next twenty-four pages and are grouped chronologically as well as from the least to the most challenging.

page 112 Greek Temple
page 118 Synagogue
page 124 Cathedral
page 130 Mosque
page 136 Castle

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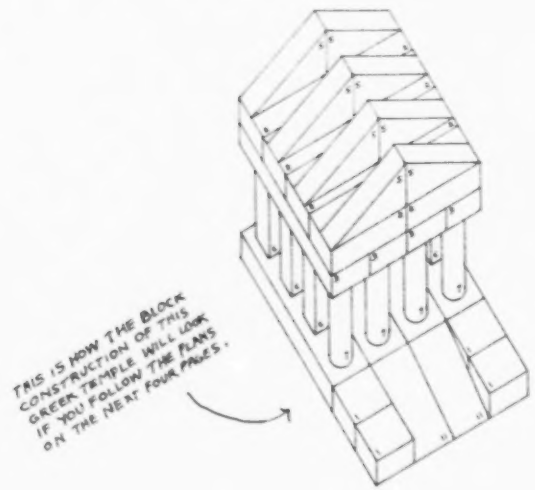
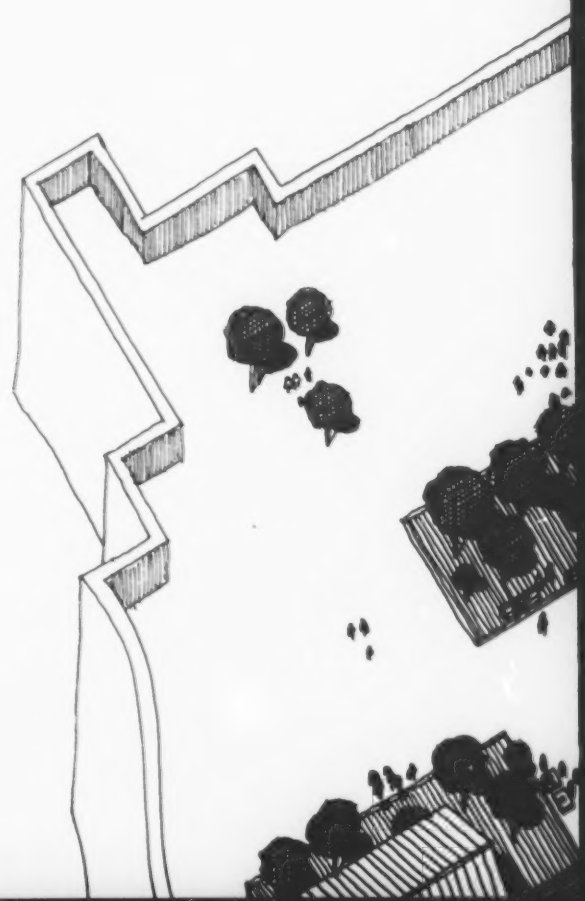
GREEK TEMPLE

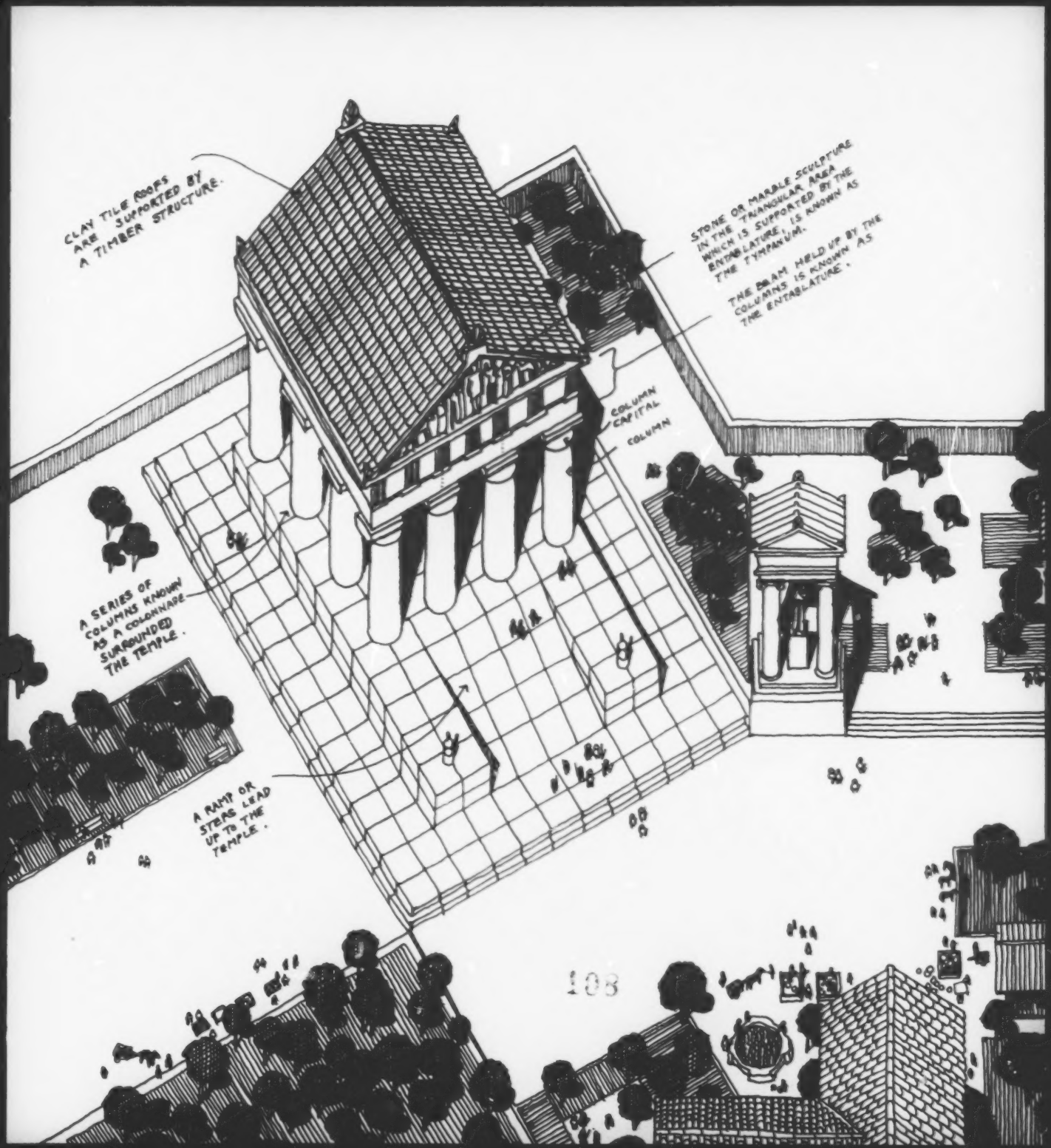
The Greek temple is generally known as the most nearly architecturally perfect building type ever erected in the history of the world. Temples were built 2,500 years ago throughout the Greek empire as special stone and marble buildings dedicated to honor Greek gods. Unlike churches, synagogues, or mosques of today, the Greek temple was not intended for worship. It did have walls and usually one large room, called a sanctuary, with a statue of the god inside, but it was built primarily for its outward effect—solid and awe-inspiring.

The Greek temple displayed timelessly valid, mathematical rules of proportion, which came to be known as classical architecture. This style has been copied off and on throughout the world since the first temple was erected, attesting to the truth of Plutarch's statement, "They were created in a short time for all time."

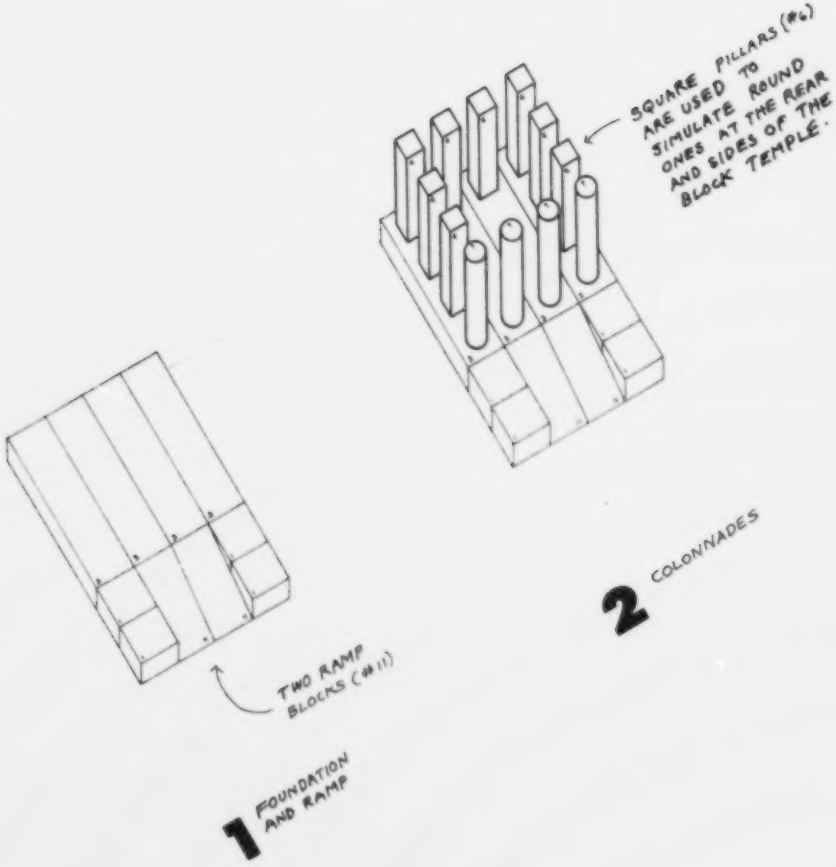
Imagine carving stone into parts that would make up the wonderfully proportioned columns and beams of the Greek temple. Imagine how exciting it would be to see the pieces of stone fit together to make one of the most beautiful buildings the world has ever seen.





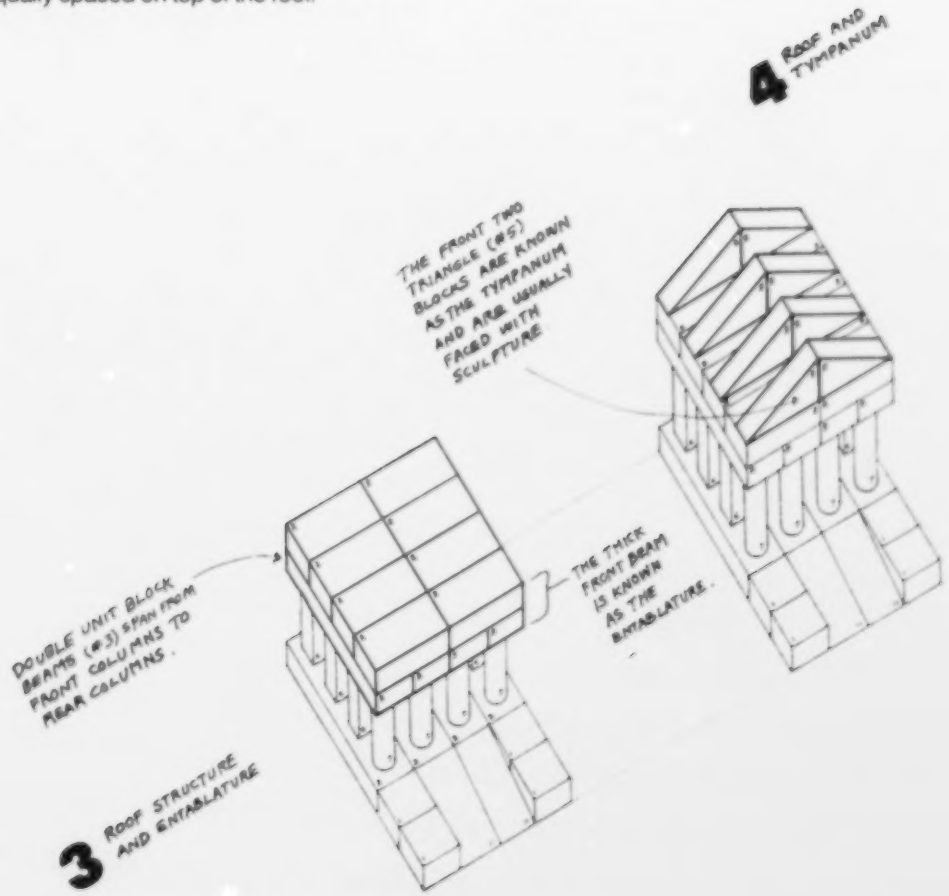

CLAY TILE ROOFS ARE SUPPORTED BY A TIMBER STRUCTURE.
STONE OR MARBLE SCULPTURE IN THE TRIANGULAR AREA WHICH IS SUPPORTED BY THE ENTABLATURE, IS KNOWN AS THE TYMPANUM.
THE BEAM HELD UP BY THE COLUMNS IS KNOWN AS THE ENTABLATURE.
COLUMN CAPITAL
COLUMN
A SERIES OF COLUMNS KNOWN AS A COLONNADE SURROUNDED THE TEMPLE.
A RAMP OR STEPS LEAD UP TO THE TEMPLE.

The Greek temple is constructed by first building the foundation and ramp. Then the columns, which will hold up the block roof, are arranged around the perimeter of the foundation walls, creating four rows of columns known as colonnades.


SQUARE PILLARS (#6) ARE USED TO SIMULATE ROUND ONES AT THE REAR AND SIDES OF THE BLOCK TEMPLE.
TWO RAMP BLOCKS (#11)
1 FOUNDATION AND RAMP
2 COLONNADES

Next the roof structure is built, first with four double-unit block beams which are used to support the eight single-unit block roof structure pieces. This roof construction creates the thick beam known as the entablature that is held up by the front columns.

The Greek temple is completed when the eight triangle roof blocks are equally spaced on top of the roof.


4 ROOF AND TYMPANUM
THE FRONT TWO TRIANGLE (#5) BLOCKS ARE KNOWN AS THE TYMPANUM AND ARE USUALLY FACED WITH SCULPTURE
DOUBLE UNIT BLOCK BEAMS (#3) SPAN FROM FRONT COLUMNS TO REAR COLUMNS.
THE THICK FRONT BEAM IS KNOWN AS THE ENTABLATURE.
3 ROOF STRUCTURE AND ENTABLATURE

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SYNAGOGUE

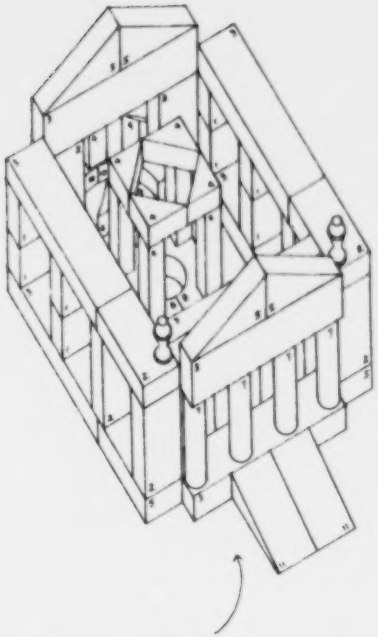
The synagogue is the building that is the center for community activities, study, and prayer for the Jewish people. It has a large open space, called the main sanctuary, that is reserved for worship during the Sabbath and religious holidays, and often a smaller chapel used for daily services. In more recent times, many synagogues have added facilities for education, meetings, and social celebrations, such as weddings and bar mitzvahs.

Some scholars believe that the first synagogue was built over 2,500 years ago in Babylon, while many others think that it started in the Holy Land. Everyone seems to agree, however, that it was a new kind of religious building, based on the participation of all the faithful, worshiping inside the building. In this way, it differed greatly from the temple, where the ritual was conducted inside the sanctuary by priests only, with the rest of the worshipers kept outside.

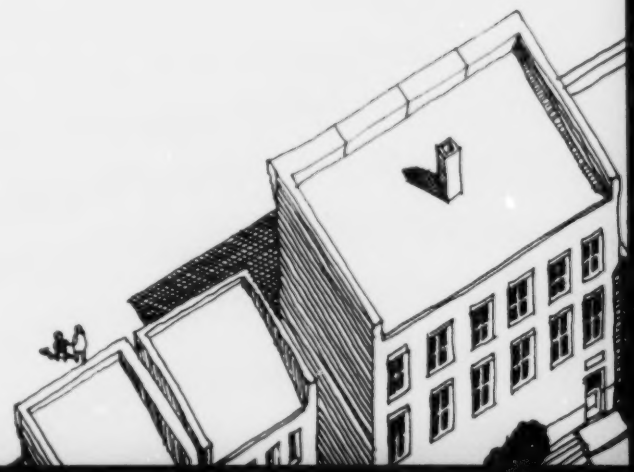
Synagogues have no typically distinct style. Usually they were fashioned in the style of architecture that prevailed in the country in which they were built, and quite often followed the style of neighboring churches. Most synagogues, however, oriented their worship areas toward Jerusalem and were located at a high point in town or near a body of water whenever possible.

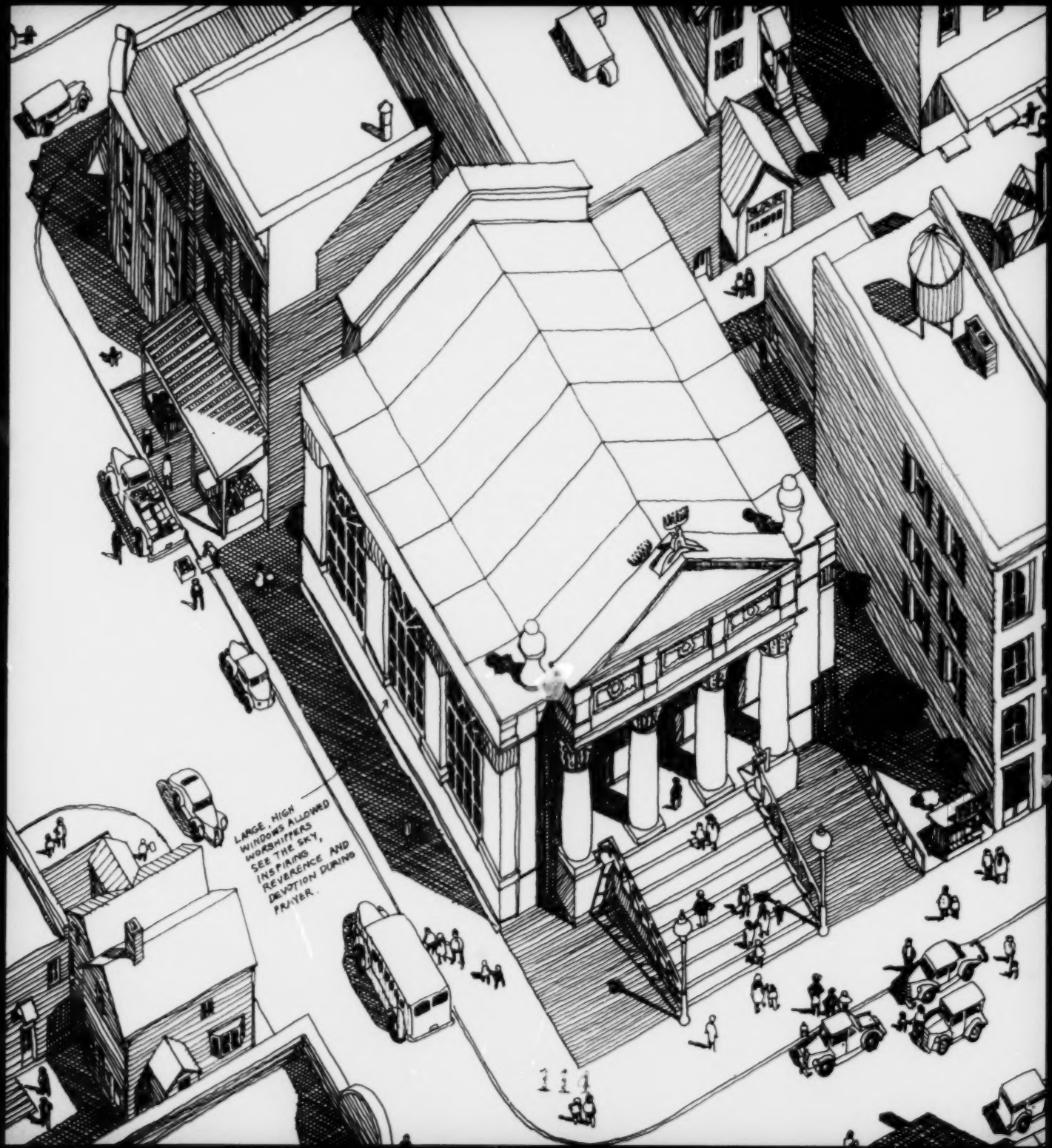
Our synagogue is styled after many of the beautiful stone synagogues built throughout the world in the last 150 years using much of the classic detailing developed by the Greeks and Romans. This is a very straightforward design with spaces provided only to hold religious functions. There are no rooms for extracurricular community activities or social events. If you have enough blocks, feel free to add rooms on to one or both sides to make your synagogue more of a community center.

Imagine being part of a group, or congregation, that is planning and then building a beautiful building in which to worship. Imagine how exciting it would be when the cornerstone of the building is put into place.

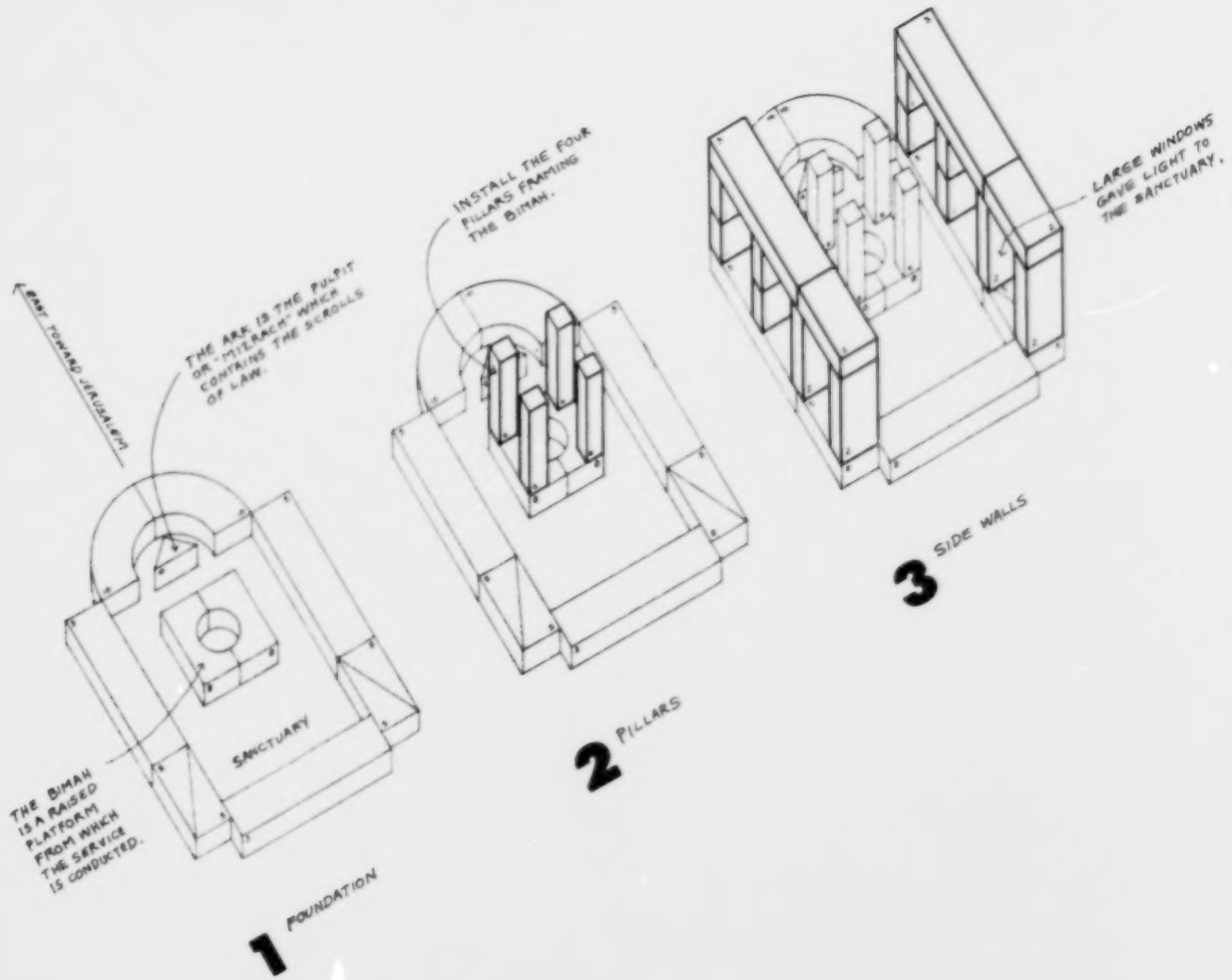


THIS IS HOW THE BLOCK CONSTRUCTION OF THIS SYNAGOGUE WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.

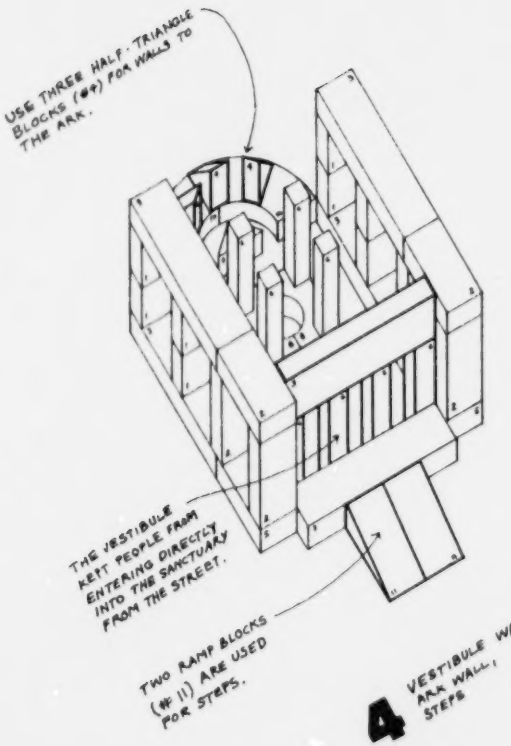



LARGE, HIGH WINDOWS ALLOWED WORSHIPPERS SEE THE SKY, INSPIRING REVERENCE AND DEVOTION DURING PRAYER.

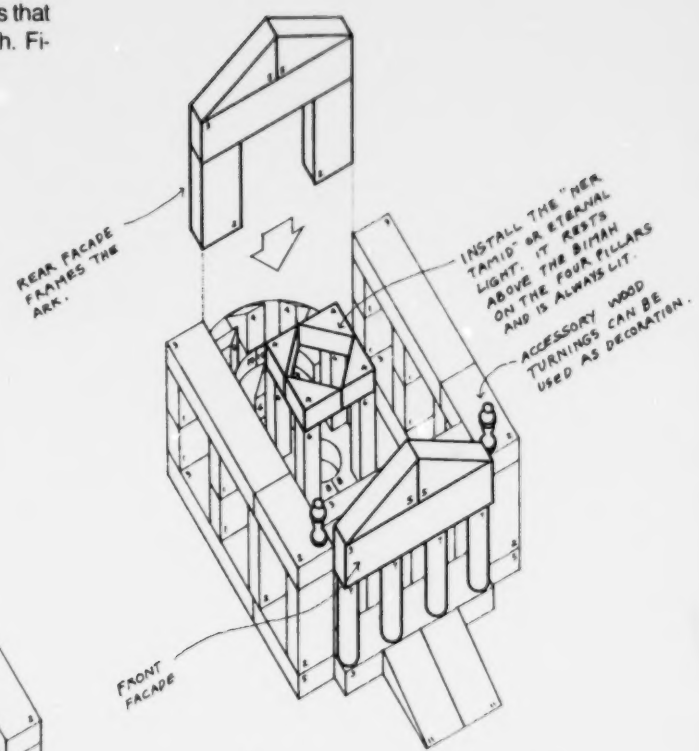
Begin building the block synagogue by constructing the foundations with your blocks laid flat on the floor. Next add the four pillars that frame the platform from which the services are conducted, called the "bimah," and then build the side walls. Imagine the openings between the blocks supporting the side walls as big, beautiful stained-glass windows.


EAST TOWARD JERUSALEM
THE ARK IS THE PULPIT OR "MIZRACH" WHICH CONTAINS THE SCROLLS OF LAW.
SANCTUARY
THE BIMAH IS A RAISED PLATFORM FROM WHICH THE SERVICE IS CONDUCTED.
1 FOUNDATION
INSTALL THE FOUR PILLARS FRAMING THE BIMAH.
2 PILLARS
LARGE WINDOWS GAVE LIGHT TO THE SANCTUARY.
3 SIDE WALLS

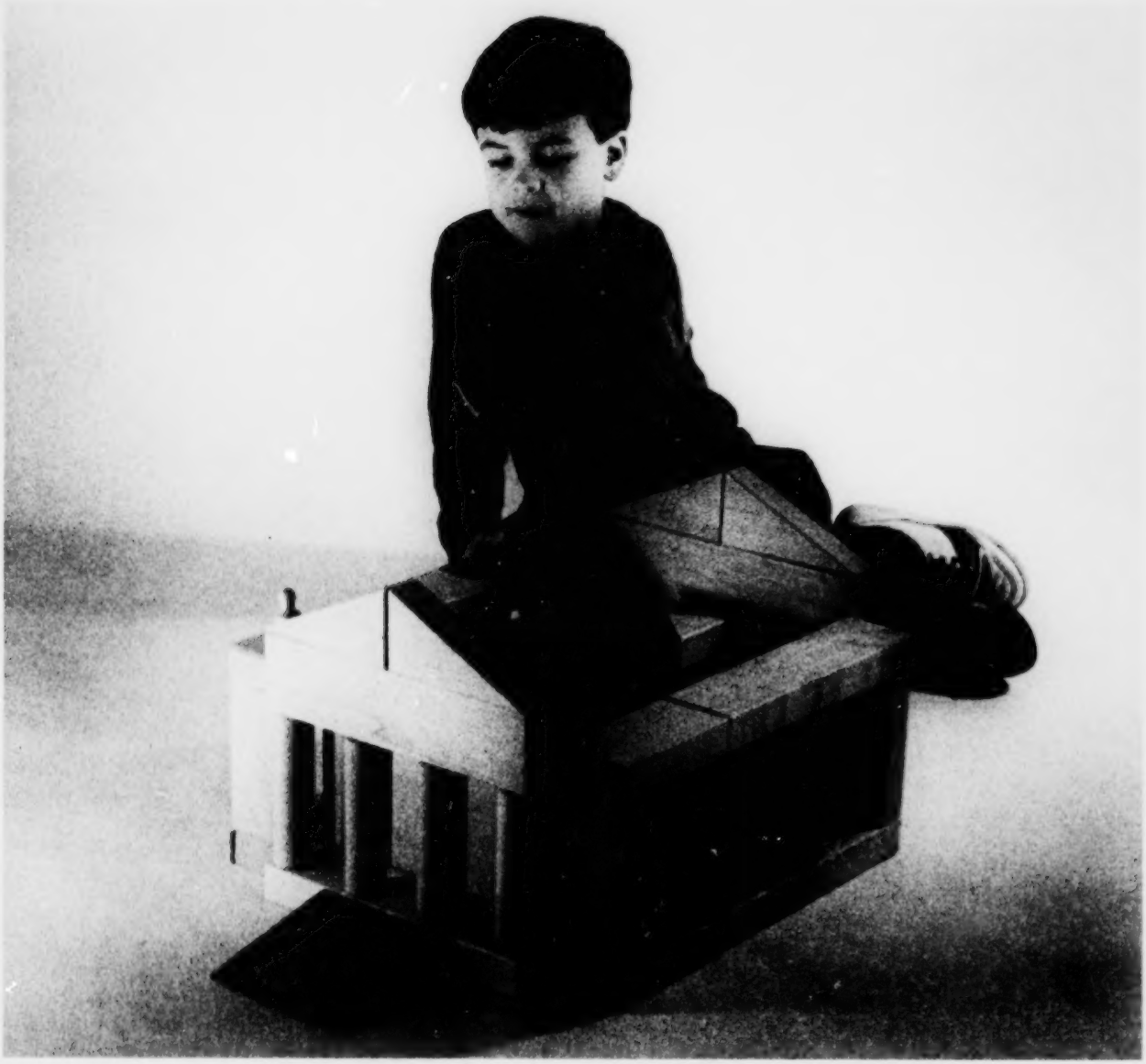
To complete the block synagogue, finish the vestibule wall and install the back wall to the ark. Then add the blocks that surround the eternal light that hangs above the bimah. Finally, add the front and back walls to the building.


USE THREE HALF-TRIANGLE BLOCKS (#4) FOR WALLS TO THE ARK.
THE VESTIBULE KEPT PEOPLE FROM ENTERING DIRECTLY INTO THE SANCTUARY FROM THE STREET.
TWO RAMP BLOCKS (#11) ARE USED FOR STEPS.

4 VESTIBULE WALL, ARK WALL, STEPS


REAR FACADE FRAMES THE ARK.
INSTALL THE "NER TAMID" OR ETERNAL LIGHT. IT RESTS ON THE FOUR PILLARS ABOVE THE BIMAH AND IS ALWAYS LIT.
ACCESSORY WOOD TURNINGS CAN BE USED AS DECORATION.
FRONT FACADE

5 FRONT AND REAR FACADES



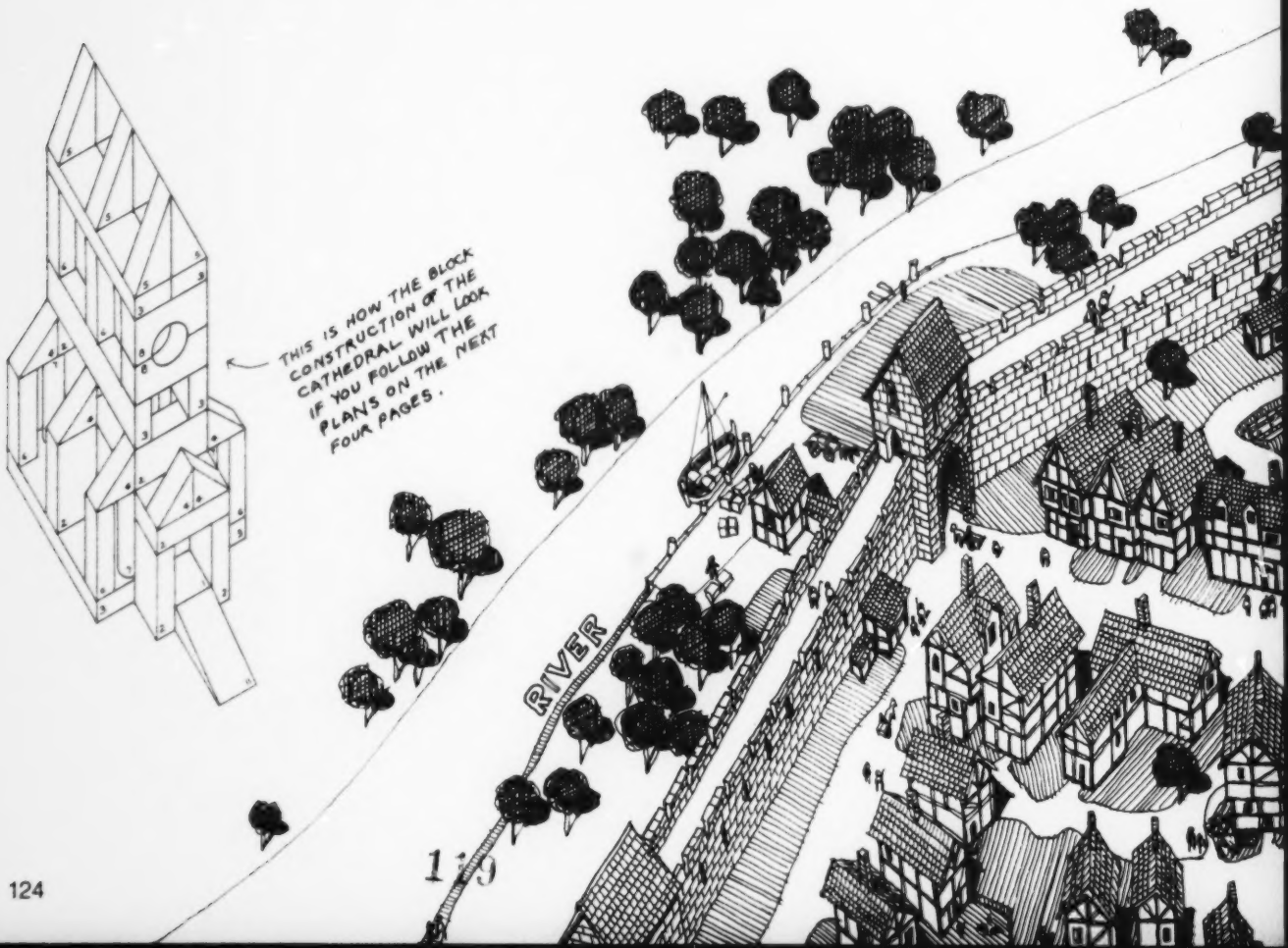
CATHEDRAL

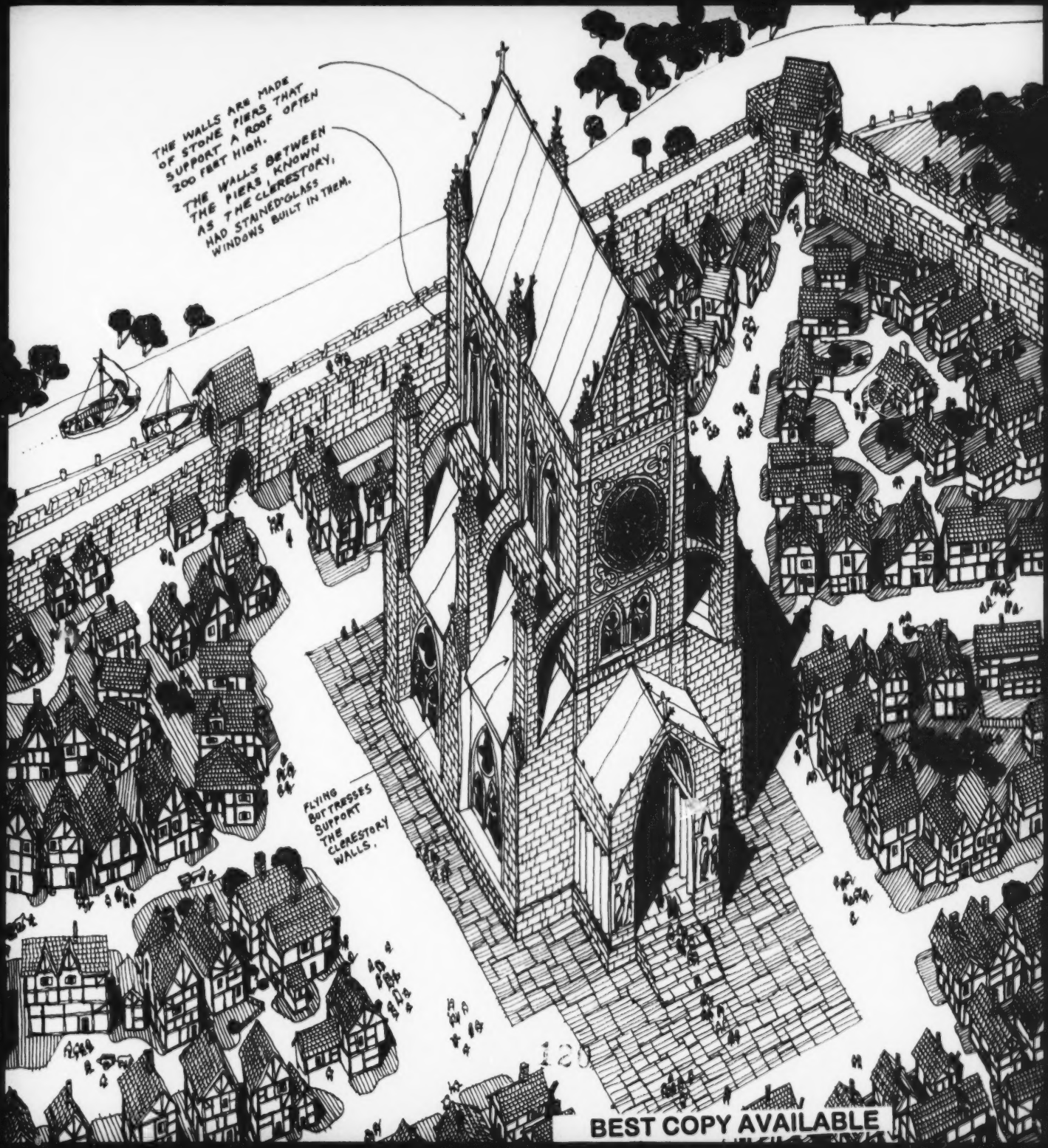
The gothic cathedral is a very tall, stone, Christian church built by a town's craftspeople to honor God and to house sacred religious objects. They were most commonly built in western Europe during the twelfth, thirteenth, and fourteenth centuries, often taking two-hundred years to construct.

The cathedral was usually built in the center of the town with limestone cut from nearby quarries and timber cut from nearby forests. Local stonecutters and sculptors were employed to carve the stone, masons to lay the stone, carpenters to build the doors and the wood roof trusses, blacksmiths to make hardware, glassmakers to cut and install the windows, and roofers to install the lead roofs.

Most of these cathedrals are still in use today and remain monuments to all the master craftspeople and their apprentices who built them. The cathedral, because of its efficient structural system, its awe-inspiring architecture, and its wonderful craftsmanship, is regarded as one of the finest building types in the world.

Imagine standing inside a cathedral built with slender stone columns and beams supporting huge walls of stained glass, and the space inside is so high that clouds can form near the ceiling.




THE WALLS ARE MADE OF STONE PIERS THAT SUPPORT A ROOF OFTEN 200 FEET HIGH.
THE WALLS BETWEEN THE PIERS KNOWN AS THE CLERESTORY, HAD STAINED-GLASS WINDOWS BUILT IN THEM.
FLYING BUTTRESSES SUPPORT THE CLERESTORY WALLS.

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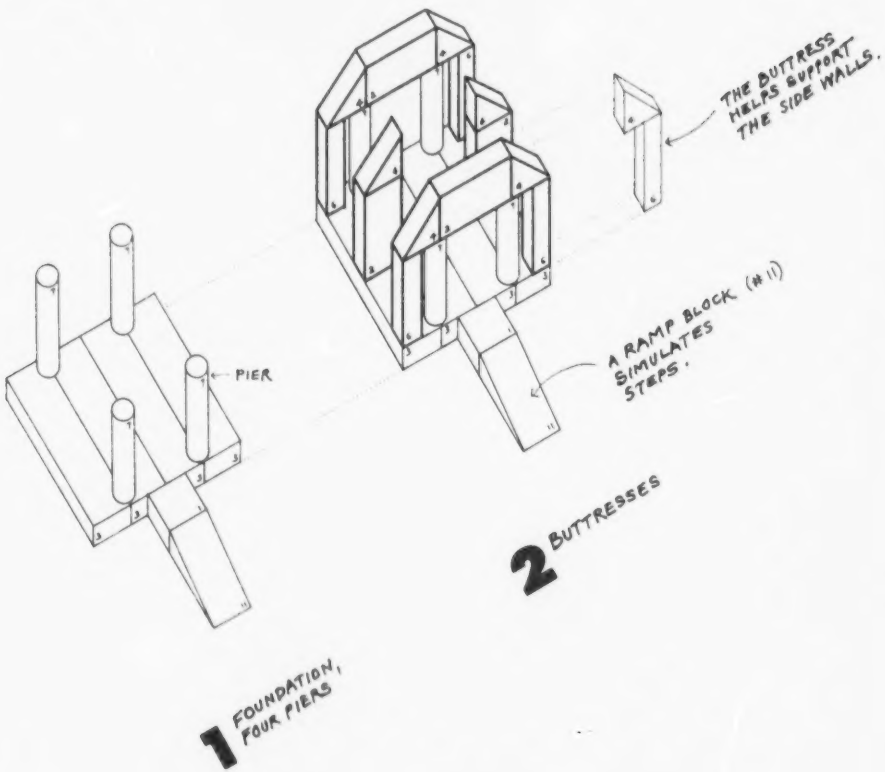
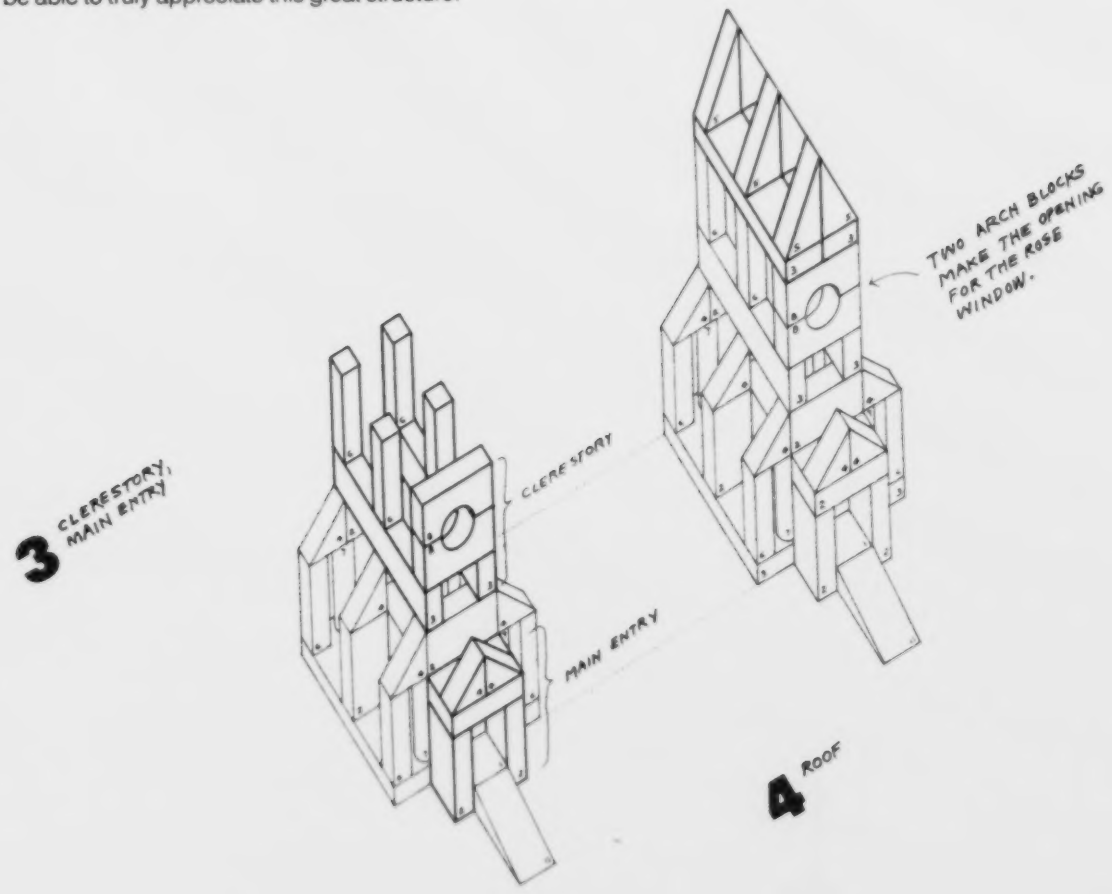
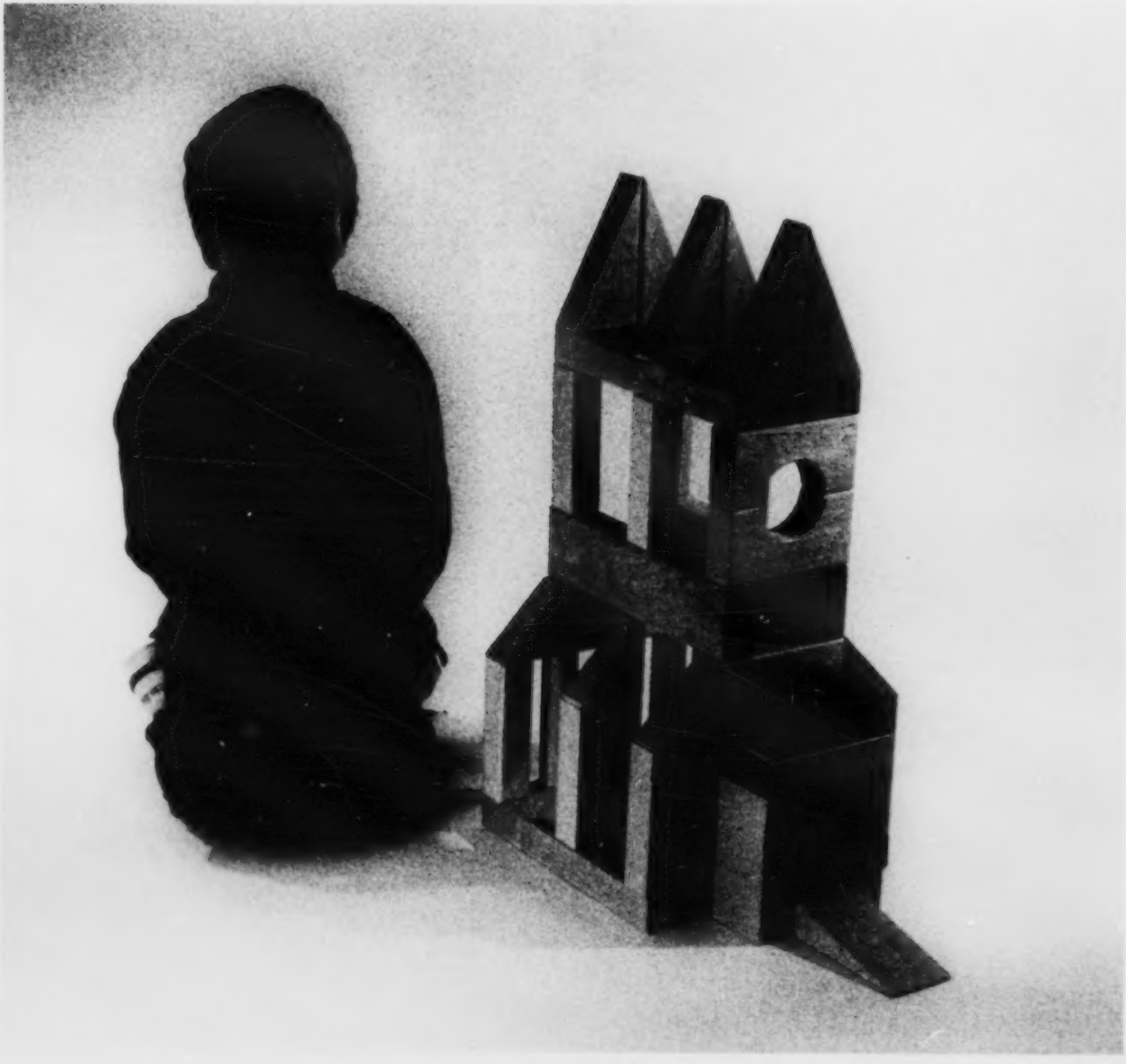
The block cathedral is meant to be built like the cathedrals of the Middle Ages. Beginning with a foundation and piers, the blocks are set one on top of another the same way that stonework was laid 800 years ago. You, the master-blockbuilder, will be able to appreciate the difficulty of the engineering of the cathedral as you build your structure higher. The importance of the buttresses and the sturdiness of the block cathedral after the roof is installed should be noted.



The block cathedral is completed when the main entry, the clerestory, and the roof are installed. Imagine a rose window (a circular window that is made from glass that is designed to look like rose petals radiating from the center) above the main entry, the clerestory windows, and windows between the buttresses made of stained glass and you will be able to truly appreciate this great structure.





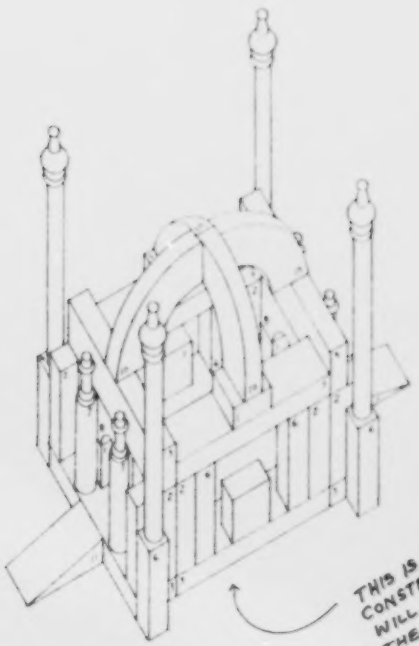
MOSQUE

Throughout the world of Islamic architecture, which stretches from Spain through the Middle East to eastern India, the primary building type has been the mosque, a religious structure for Muslims' communal prayer. Most mosques can easily be identified by their large domed roofs and distinctive tall, slender towers, called minarets, from which the calls to prayer are chanted. Mosques were built as early as the seventh and eighth centuries, with materials that varied from marble to wood, depending on the region where they were built.

Unlike churches, synagogues, and most other religious buildings, mosques have no statues or pictures, no chairs or benches, and there is no music. Men stand barefoot, and women pray in separate spaces. Unique, geometric, brilliantly colored patterns are crafted into the interior walls and stained-glass windows. Directly under the center of the dome, a fountain was usually placed for special prayer. The side of the building facing Mecca, Islam's most holy city, contained a niche that indicated the direction (toward Mecca) worshipers were to face for prayer. By the side of the niche there was a pulpit and a desk from which the priest read passages from the Koran and intoned his prayers. Mosques are also used for many public functions, such as political, military, and educational gatherings and regional festivals.

Our mosque is similar to one built a long time ago in a typical Turkish city. It has a large dome and four minarets overlooking the city where the priest (imam) calls his worshipers to prayer.

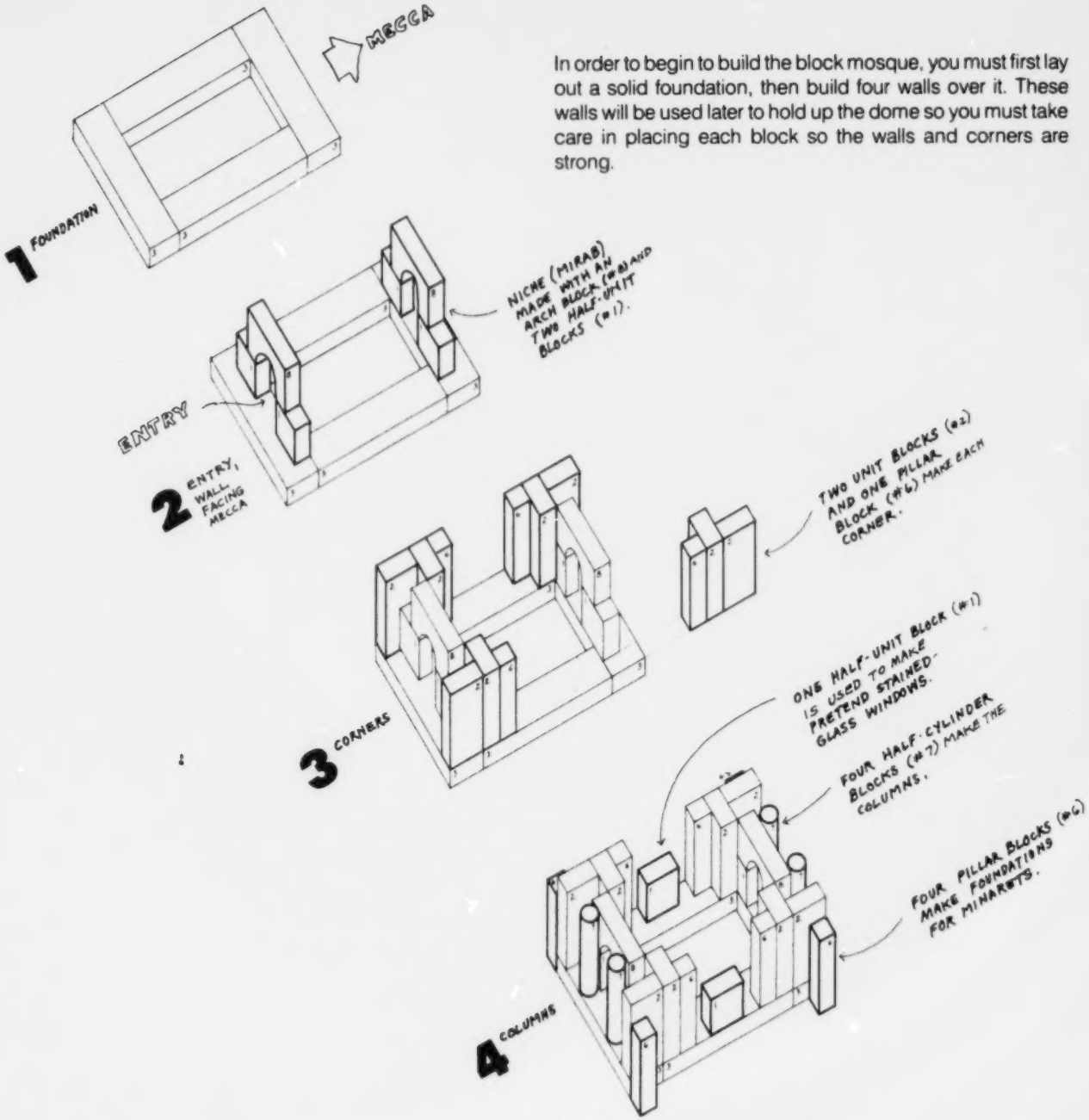
Imagine walking up to the very top of one of the minarets and calling people to prayer, then watching as they leave their houses and walk through the town to the mosque.

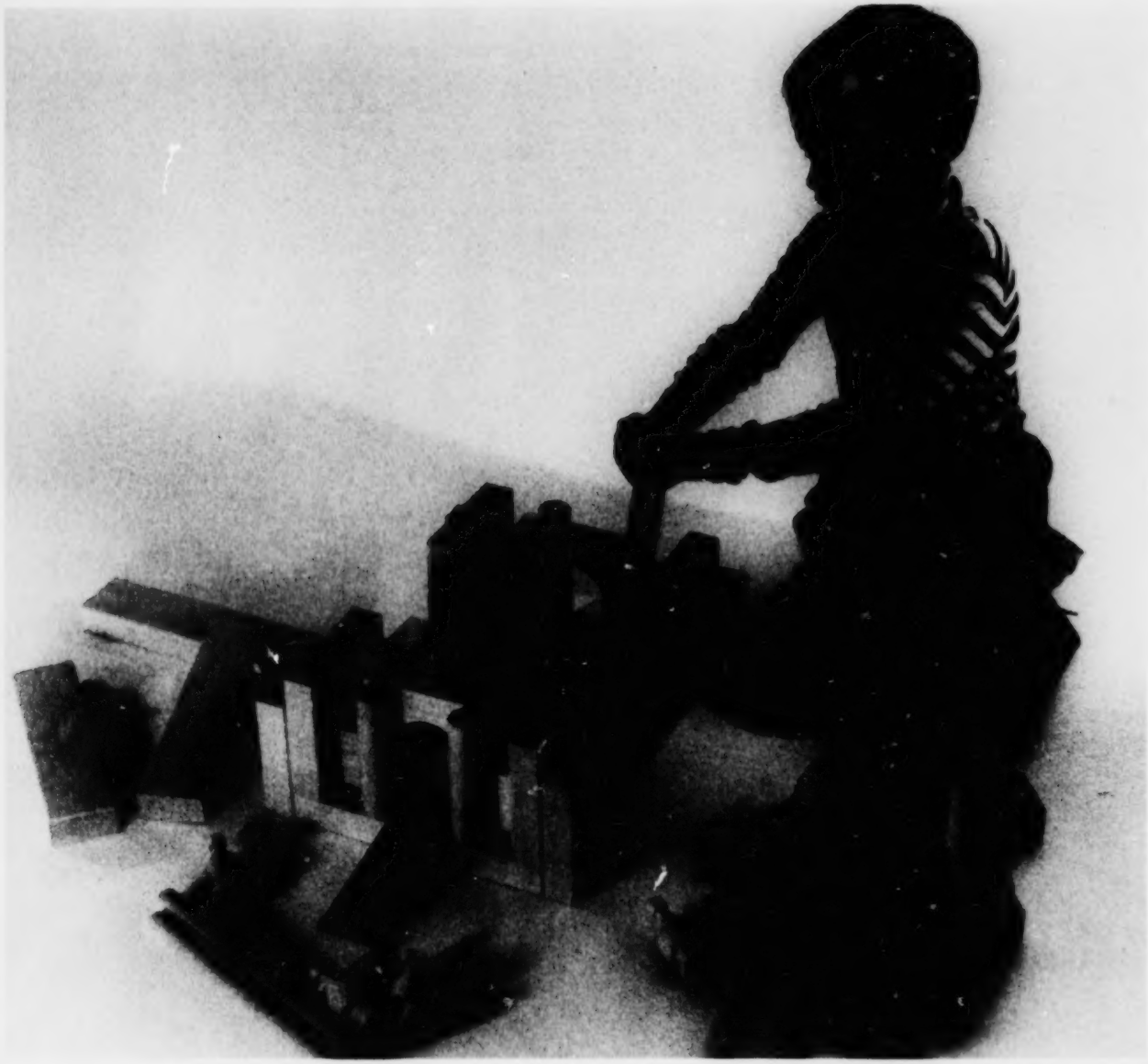


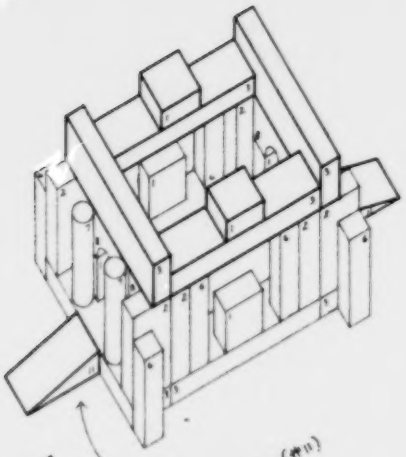
THIS IS HOW THE BLOCK CONSTRUCTION OF THIS MOSQUE WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.

THE TALL, SLENDER TOWERS WITH BALCONIES, WHERE PRIESTS CALL PEOPLE TO PRAYER, ARE CALLED MINARETS.
DOME
THE WALL FACING MECCA CONTAINS A NICHE TO INDICATE THE DIRECTION FOR PRAYER.
DOME
POINTED ARCHES ARE COMMON IN ISLAMIC ARCHITECTURE.

In order to begin to build the block mosque, you must first lay out a solid foundation, then build four walls over it. These walls will be used later to hold up the dome so you must take care in placing each block so the walls and corners are strong.


MECCA
1 FOUNDATION
NICHE (MIRAB) MADE WITH AN ARCH BLOCK (#8) AND TWO HALF-UNIT BLOCKS (#1).
ENTRY
2 ENTRY, WALL FACING MECCA
TWO UNIT BLOCKS (#2) AND ONE PILLAR BLOCK (#6) MAKE EACH CORNER.
ONE HALF-UNIT BLOCK (#1) IS USED TO MAKE PRETEND STAINED-GLASS WINDOWS.
3 CORNERS
FOUR HALF-CYLINDER BLOCKS (#7) MAKE THE COLUMNS.
FOUR PILLAR BLOCKS (#6) MAKE FOUNDATIONS FOR MINARETS.
4 COLUMNS

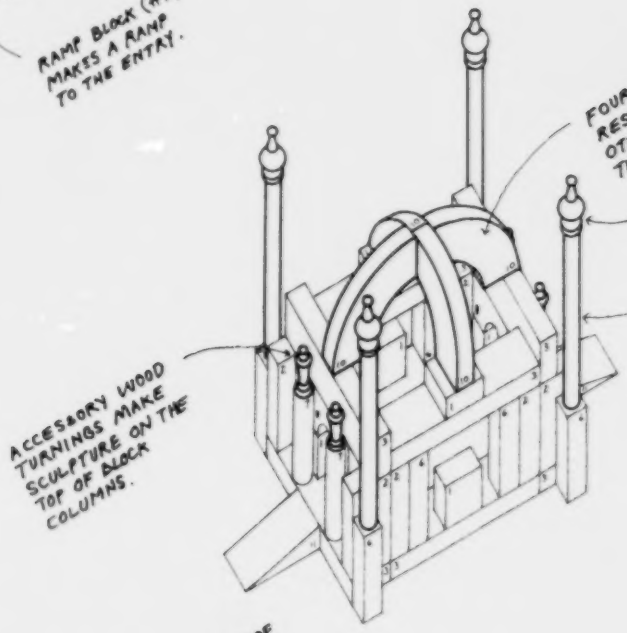




5 FLAT ROOF

RAMP BLOCK (#11) MAKES A RAMP TO THE ENTRY.

To complete the block mosque, the flat roof must be installed over the four walls, and the dome must be built on top of this roof. The dome pieces will want to spring outward at the bottom, just like real dome construction, so be patient and careful when you place the curve blocks down on the flat roof. The minarets are made from accessory blocks that are discussed on page 26. Four 1"x11" dowels make perfect minaret shafts, and the minaret balconies can be made with store-bought wooden drapery pole end turnings, found in most home furnishing stores.



FOUR CURVE BLOCKS REST AGAINST EACH OTHER TO MAKE THE DOME ROOF.

FOUR DRAPERY POLE END TURNINGS MAKE MINARET BALCONIES.

1" DIAMETER x 11" LONG ACCESSORY DOWELS.

ACCESSORY WOOD TURNINGS MAKE SCULPTURE ON THE TOP OF BLOCK COLUMNS.

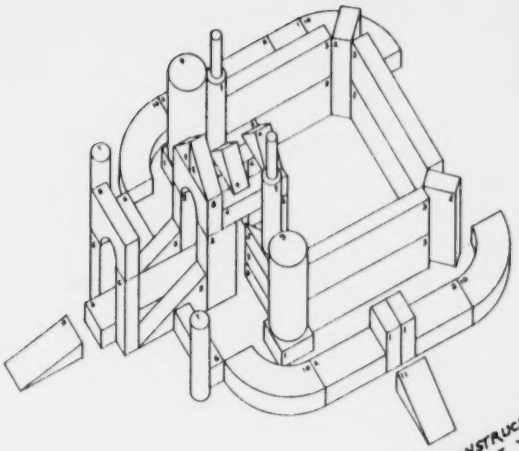
6 DOME ROOF MINARETS

CASTLE

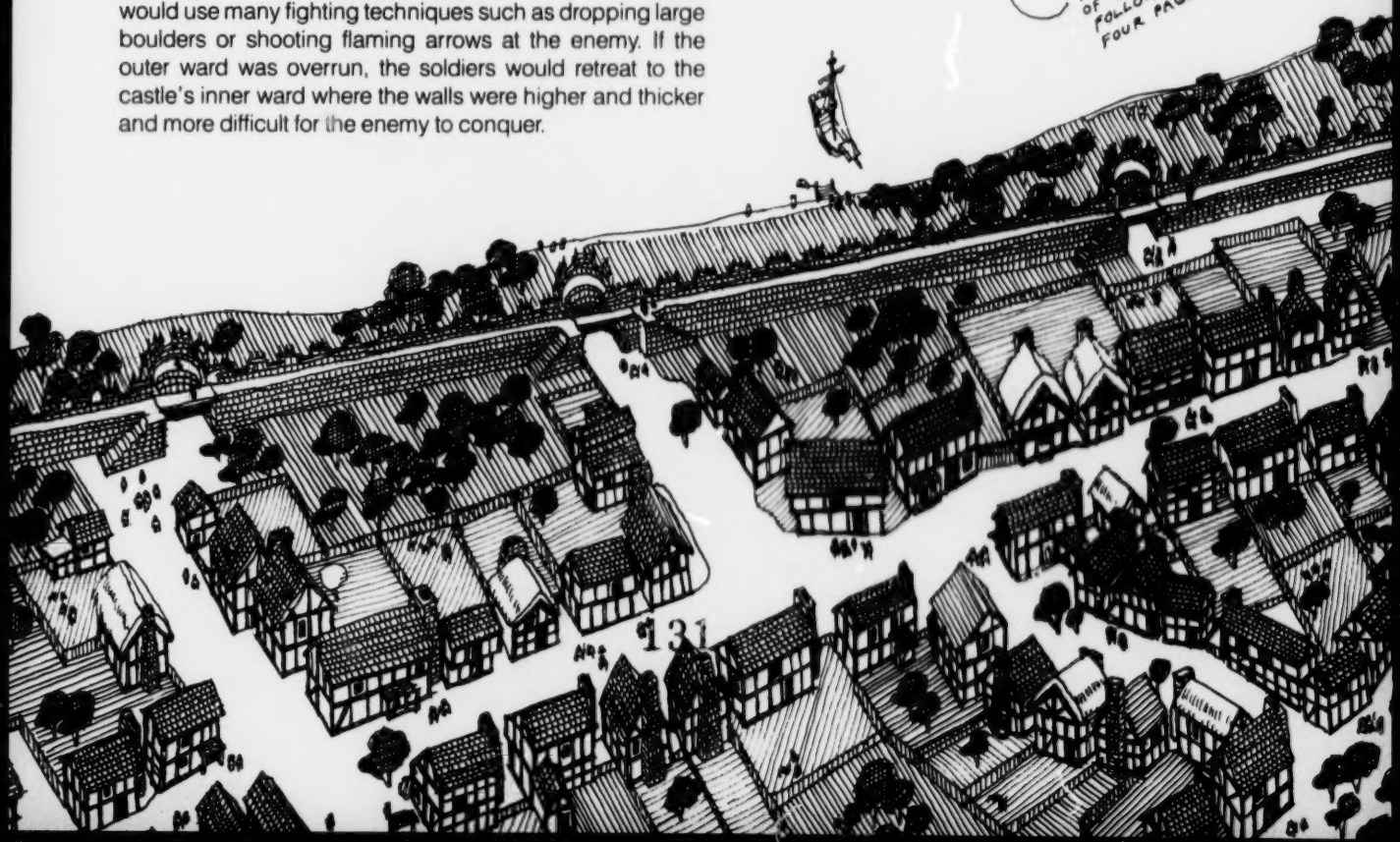
The medieval castle was a huge fortified stone residence built for the king or lord of a particular territory. They were most commonly built in western Europe beginning as early as the ninth century.

In the design of the castle, form follows function. In other words the castle's shape was built with its purpose in mind, and its purpose was to protect the occupants. It was usually located on a high mound or on a peninsula and was often surrounded by high walls known as an outer curtain and a canal known as a moat, making it easy to defend with soldiers who were faithful to the king or lord.

During a battle, the townspeople would quickly rush from their houses to the castle keep, or inner ward, where large quantities of food were stored in case of a seige. If the walls surrounding the town were overrun by the enemy, soldiers defending the castle would retreat to the castle's outer ward before the drawbridge was raised. There they would use many fighting techniques such as dropping large boulders or shooting flaming arrows at the enemy. If the outer ward was overrun, the soldiers would retreat to the castle's inner ward where the walls were higher and thicker and more difficult for the enemy to conquer.



THIS IS HOW THE BLOCK CONSTRUCTION OF THIS CASTLE WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.



SOME TURRETS, USED FOR LOOKOUTS, WERE 50 FEET HIGH.
THE APARTMENT OF THE LORD OF THE CASTLE WITH A CHAPEL AND OFFICES WAS LOCATED IN THE TOWERS OF THE INNER WARD.
INNER GATEHOUSE
A WALL WALK CONNECTED THE TOPS OF THE WALLS SO THAT SOLDIERS COULD WORK TOGETHER DURING A BATTLE.
OUTER GATEHOUSE
WOODEN DRAWBRIDGE
WALL WALK
BATTLEMENTS
INNER CURTAIN
INNER WARD
OUTER WARD
20 FEET HIGH STONE RAMP
TOWN WELL
MOAT
A POSTERN GATEHOUSE OFTEN SERVED JAILORS. IT ALSO HAD A DRAWBRIDGE TO PROTECT THE CASTLE.

Imagine your enemy is coming and you rush to the castle's inner ward. The drawbridges are raised behind you, and after a long battle, your warriors are victorious. The enemy has retreated, and it is safe to go back to your cottage outside the castle walls.

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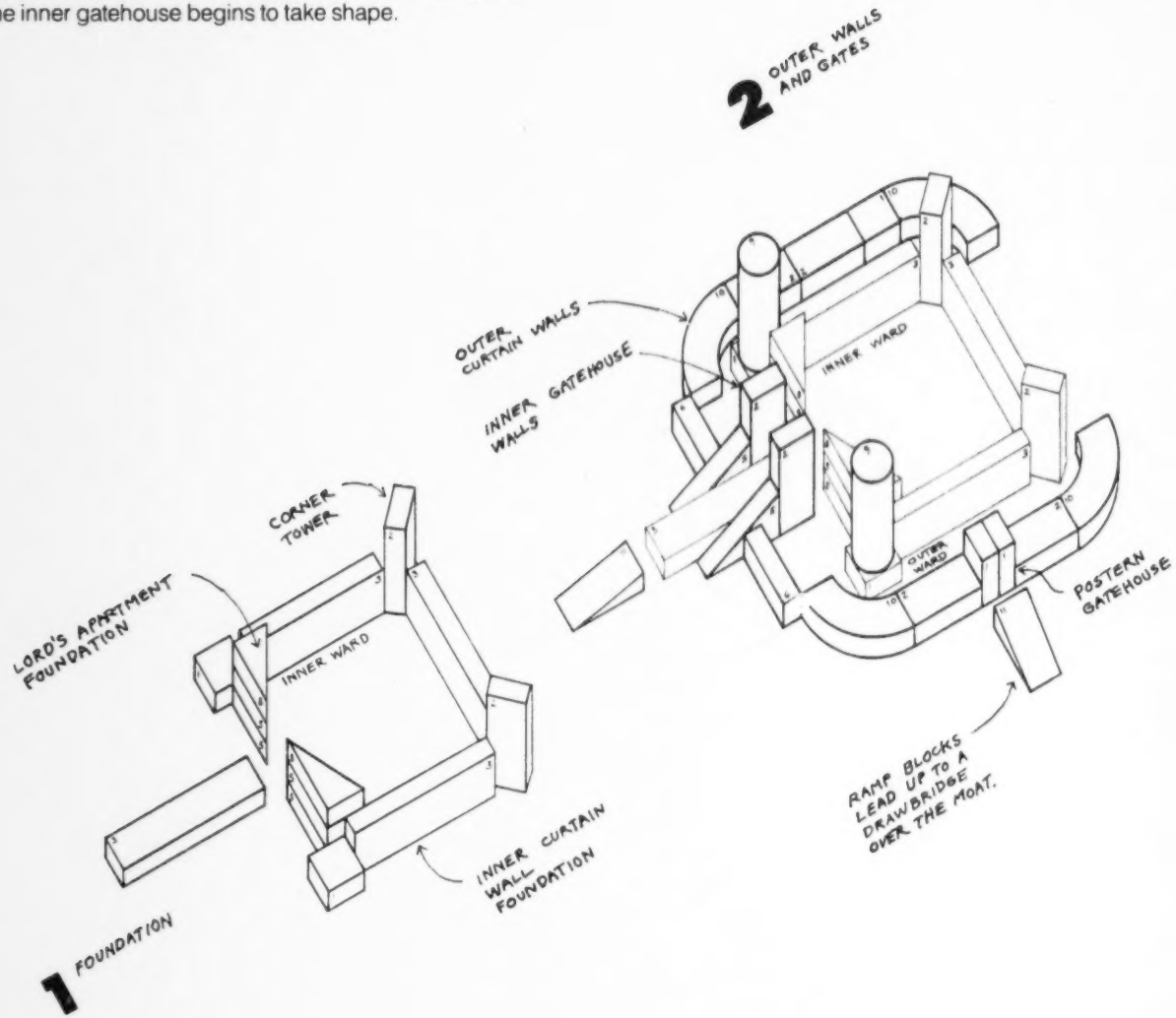
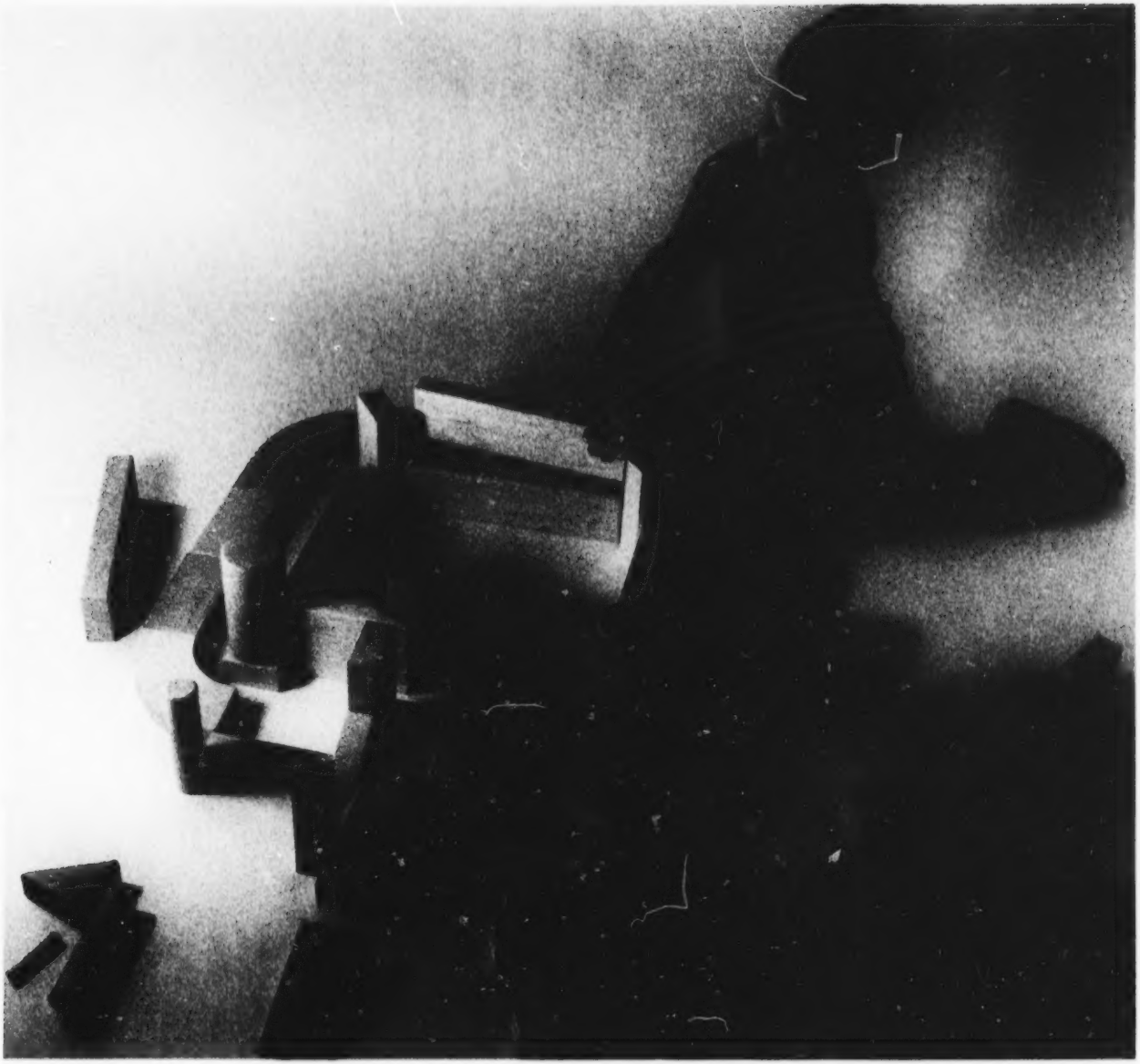
The block castle is constructed by first laying out the inner ward, or castle keep, in the center of your block building area. Foundations for walls, towers, and the lord's apartment start the work.

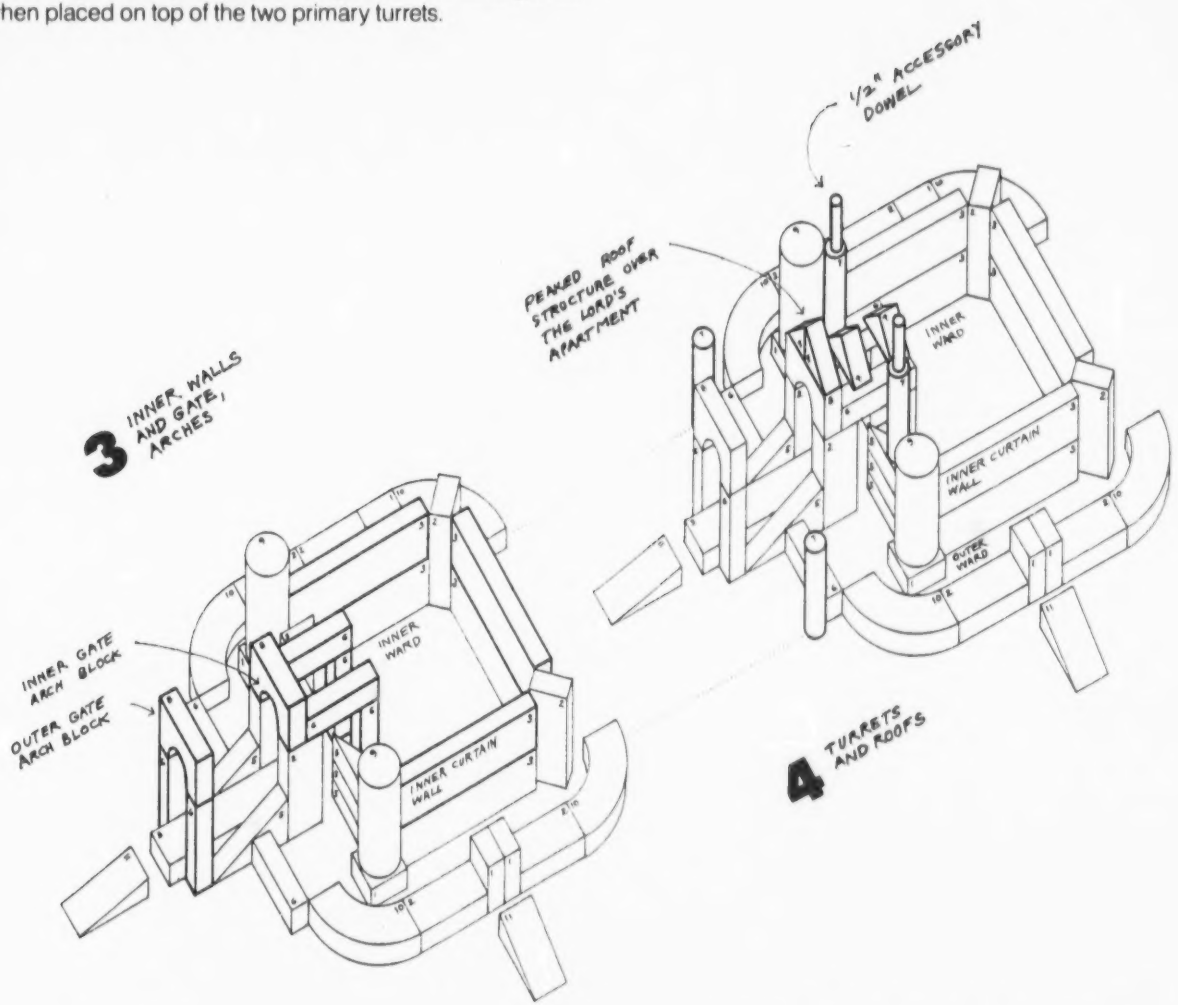
Next, the outer ward is created with walls and gates, and the inner gatehouse begins to take shape.

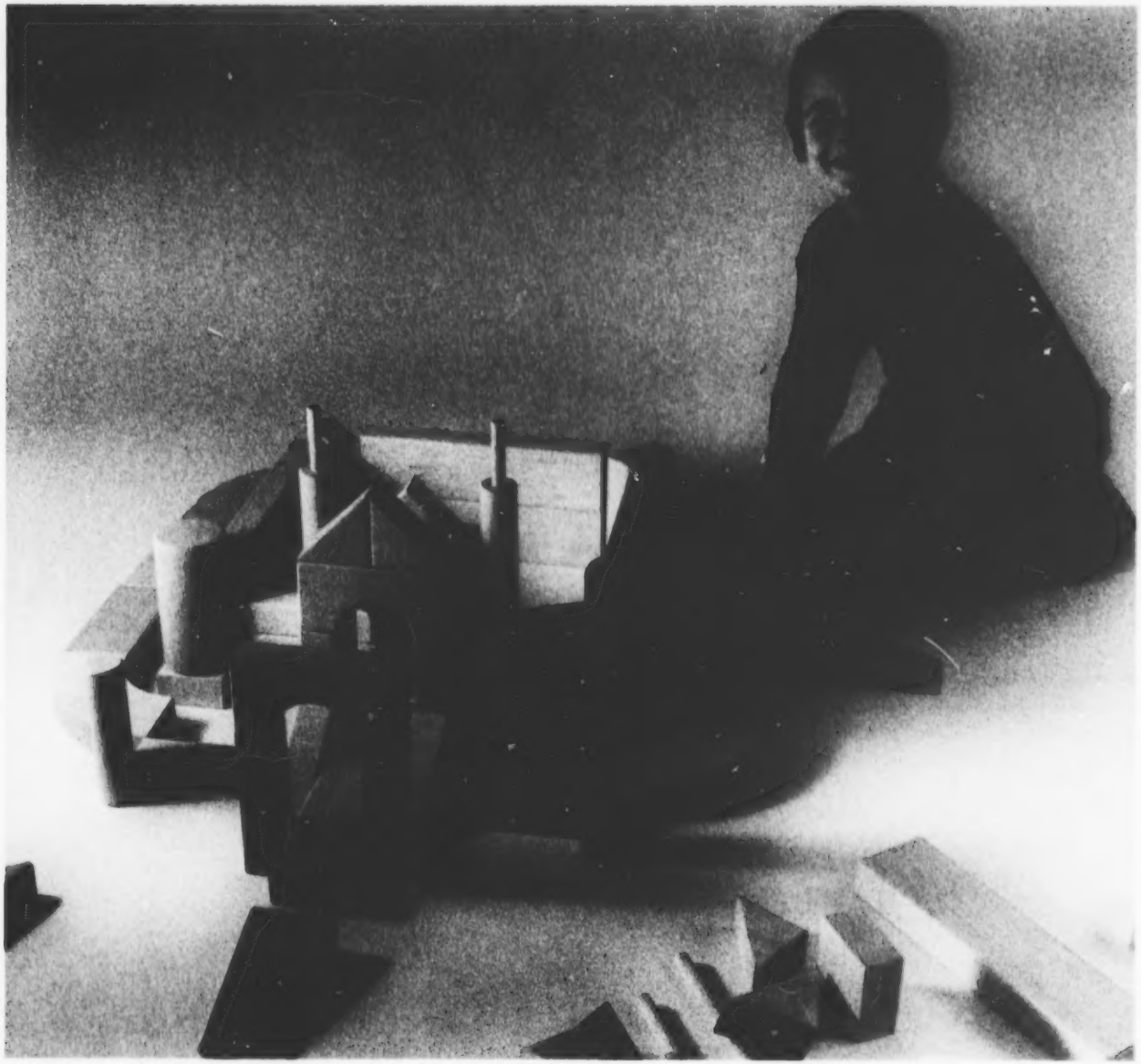




The block castle is completed when the roof structures on the outer and inner gatehouses and the inner curtain walls are finished.

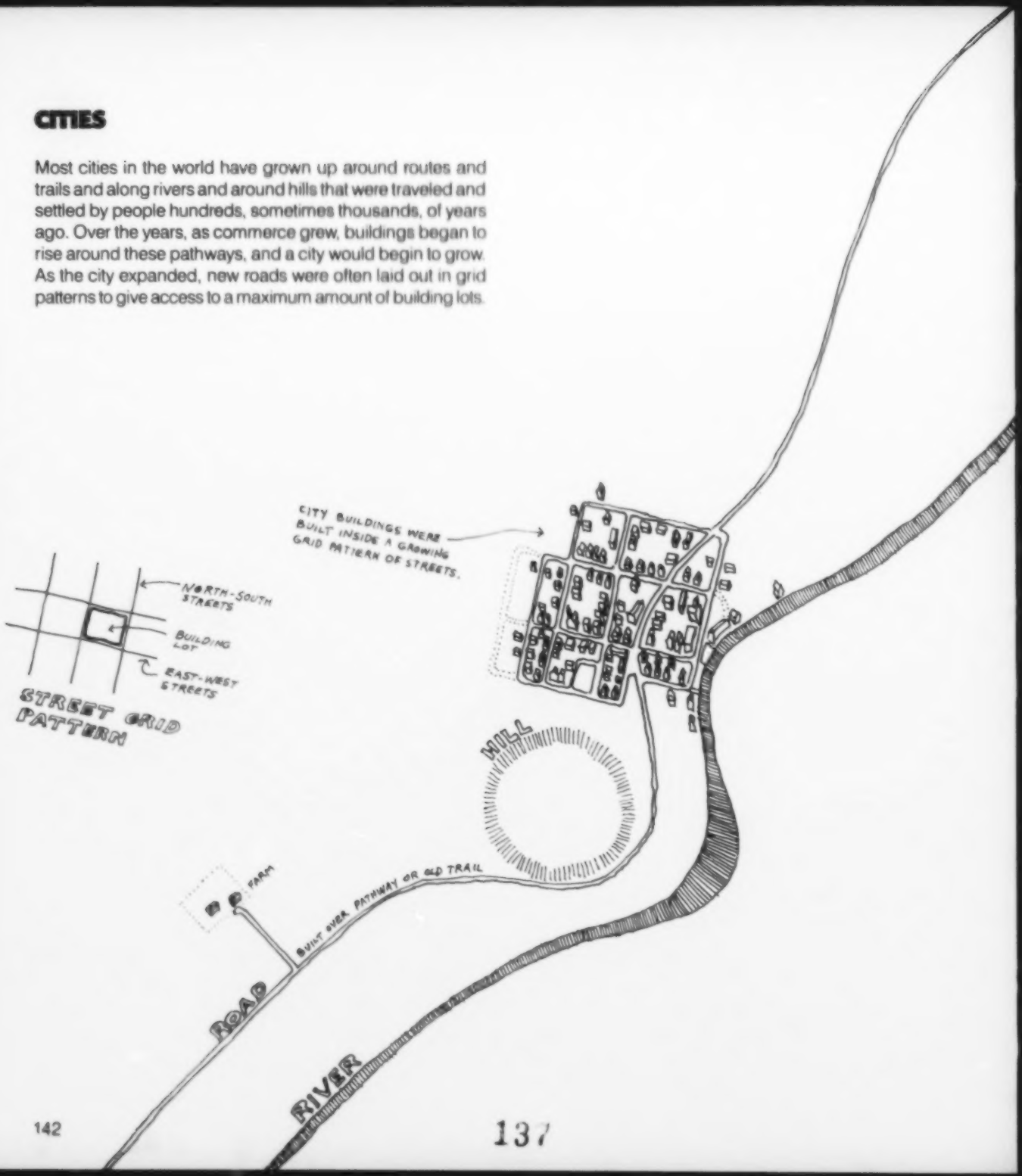
The castle is topped off with a peaked roof structure over the inner gate and the lord's apartment. Two half-inch accessory dowels (as shown on page 26) serve as flagpoles when placed on top of the two primary turrets.



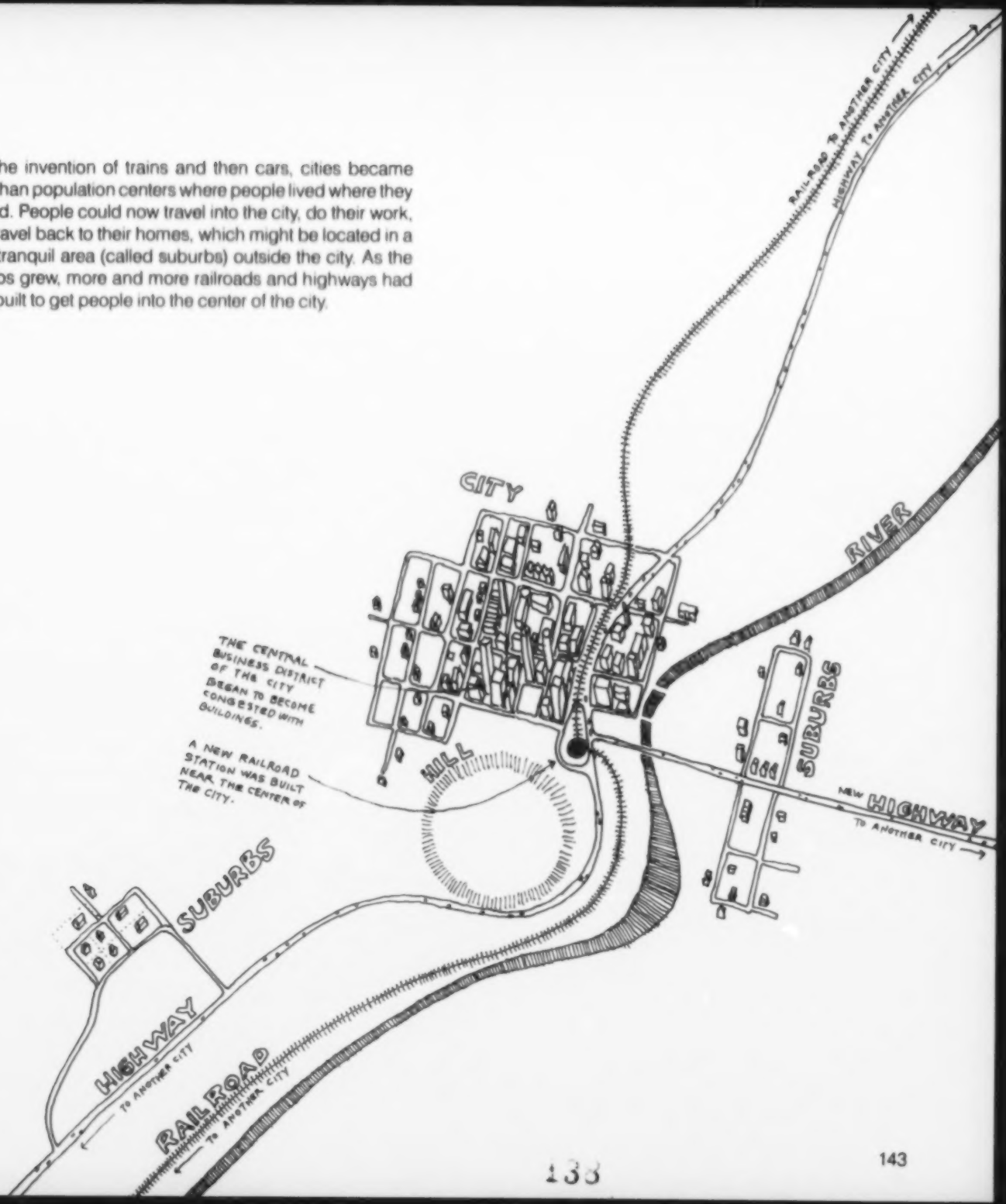


CITIES

Most cities in the world have grown up around routes and trails and along rivers and around hills that were traveled and settled by people hundreds, sometimes thousands, of years ago. Over the years, as commerce grew, buildings began to rise around these pathways, and a city would begin to grow. As the city expanded, new roads were often laid out in grid patterns to give access to a maximum amount of building lots.

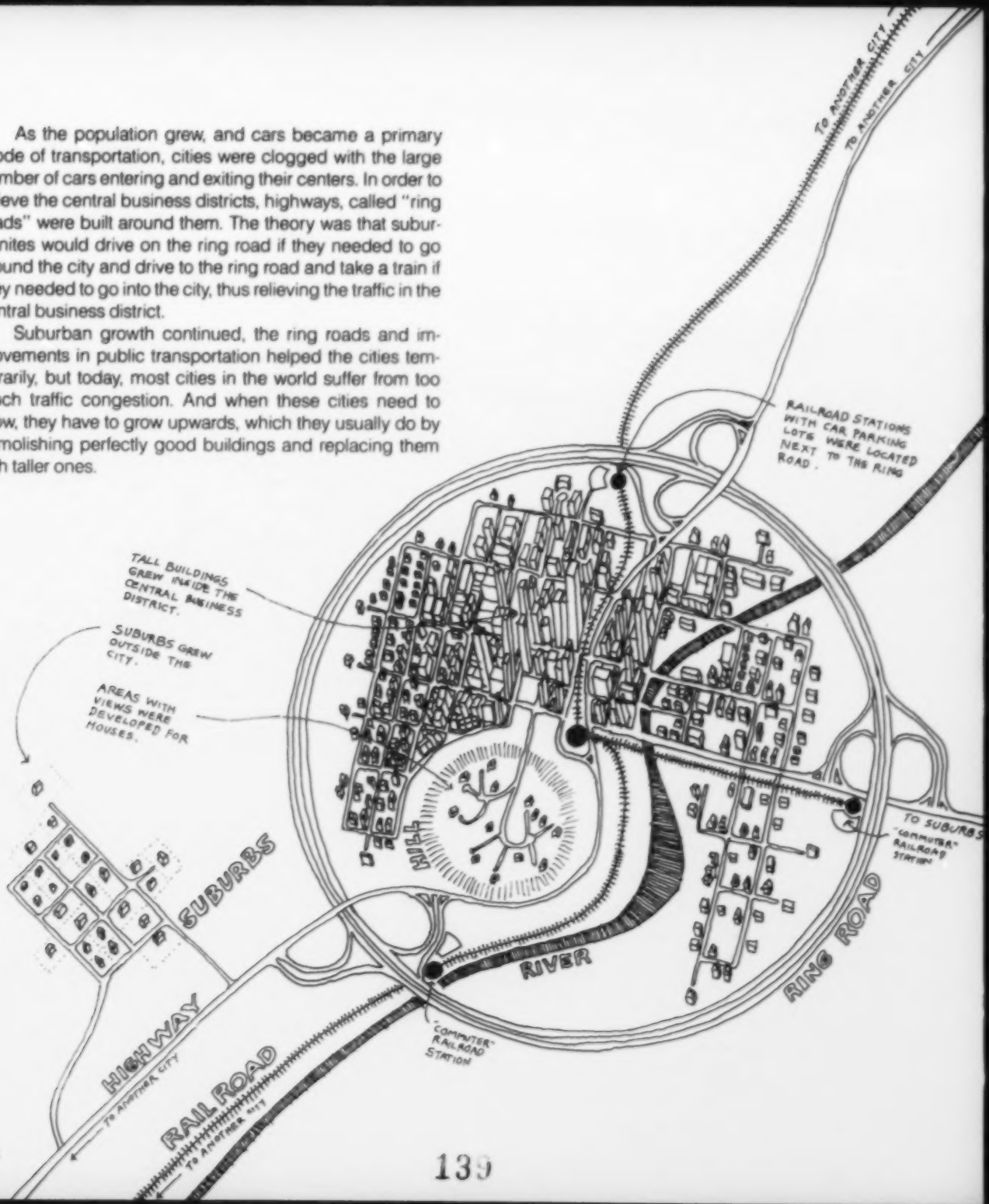


With the invention of trains and then cars, cities became more than population centers where people lived where they worked. People could now travel into the city, do their work, then travel back to their homes, which might be located in a more tranquil area (called suburbs) outside the city. As the suburbs grew, more and more railroads and highways had to be built to get people into the center of the city.


RAILROAD TO ANOTHER CITY
HIGHWAY TO ANOTHER CITY
CITY
RIVER
THE CENTRAL BUSINESS DISTRICT OF THE CITY BEGAN TO BECOME CONGESTED WITH BUILDINGS.
A NEW RAILROAD STATION WAS BUILT NEAR THE CENTER OF THE CITY.
MALL
SUBURBS
NEW HIGHWAY TO ANOTHER CITY
SUBURBS
HIGHWAY TO ANOTHER CITY
RAILROAD TO ANOTHER CITY

As the population grew, and cars became a primary mode of transportation, cities were clogged with the large number of cars entering and exiting their centers. In order to relieve the central business districts, highways, called "ring roads" were built around them. The theory was that suburbanites would drive on the ring road if they needed to go around the city and drive to the ring road and take a train if they needed to go into the city, thus relieving the traffic in the central business district.

Suburban growth continued, the ring roads and improvements in public transportation helped the cities temporarily, but today, most cities in the world suffer from too much traffic congestion. And when these cities need to grow, they have to grow upwards, which they usually do by demolishing perfectly good buildings and replacing them with taller ones.

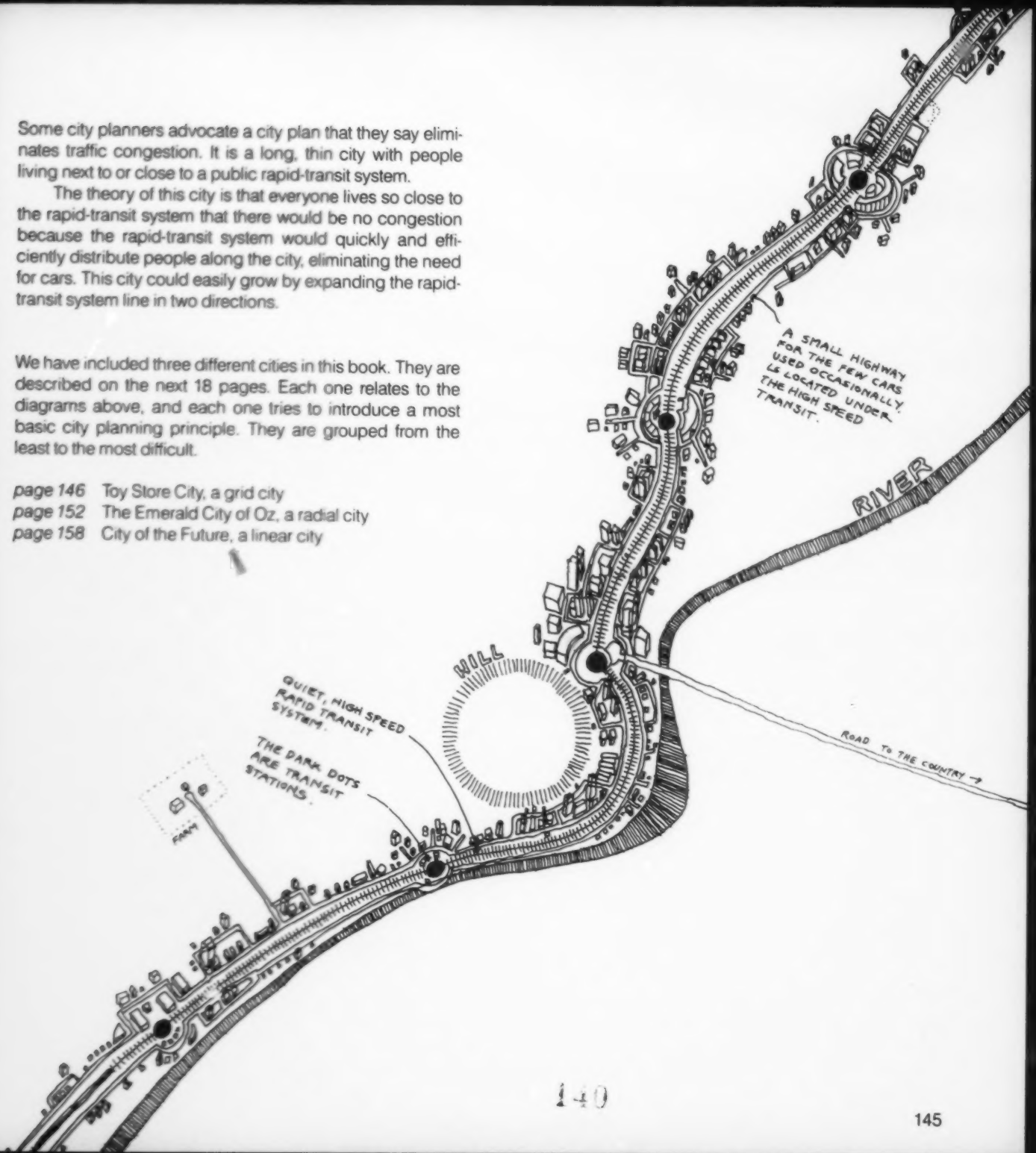


Some city planners advocate a city plan that they say eliminates traffic congestion. It is a long, thin city with people living next to or close to a public rapid-transit system.

The theory of this city is that everyone lives so close to the rapid-transit system that there would be no congestion because the rapid-transit system would quickly and efficiently distribute people along the city, eliminating the need for cars. This city could easily grow by expanding the rapid-transit system line in two directions.

We have included three different cities in this book. They are described on the next 18 pages. Each one relates to the diagrams above, and each one tries to introduce a most basic city planning principle. They are grouped from the least to the most difficult.

page 146 Toy Store City, a grid city
page 152 The Emerald City of Oz, a radial city
page 158 City of the Future, a linear city


A SMALL HIGHWAY FOR THE FEW CARS USED OCCASIONALLY. IS LOCATED UNDER THE HIGH SPEED TRANSIT.
RIVER
WALL
QUIET, HIGH SPEED RAPID TRANSIT SYSTEM.
THE DARK DOTS ARE TRANSIT STATIONS.
FARM
ROAD TO THE COUNTRY

A GRID CITY

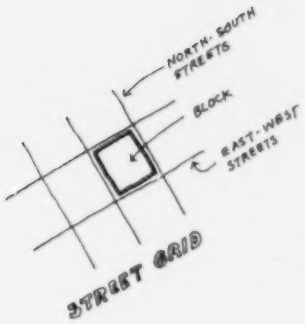
TOY STORE CITY

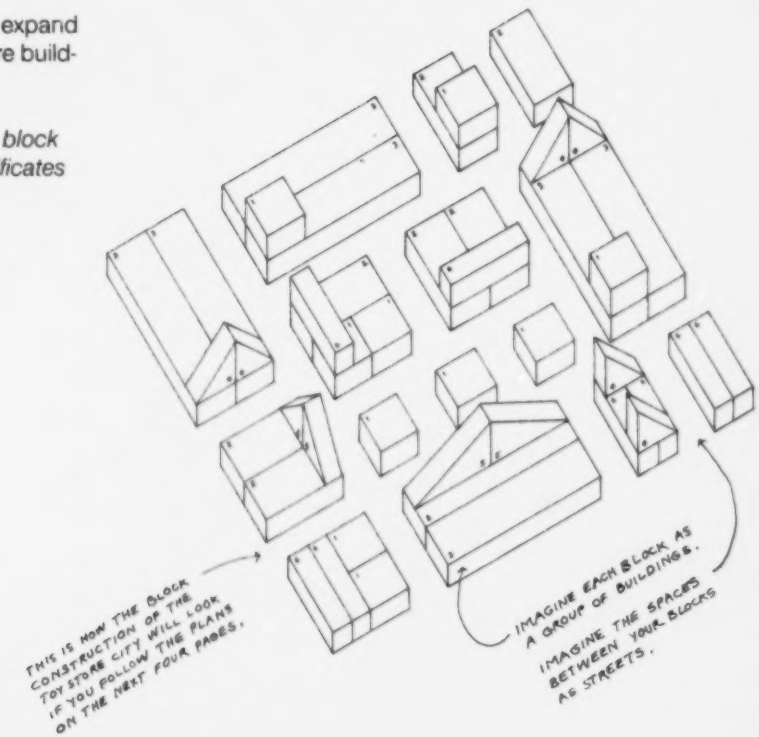
A grid city, as mentioned on page 142, is one that has a crisscross pattern of north-south and east-west streets as its traffic pattern. City planners often say that the beauty of a grid-patterned city is that everything is everywhere. In other words, each block in the grid has a market, a hardware store, a clothing store, a restaurant, apartments, and other necessary shops. Ideally, each block is a concise little town within itself and much travel, even within the city, is unnecessary. These grid cities actually worked like this in medieval times when travel was limited to the horse. To illustrate this idea, our Toy Store City was devised with a wonderful toy store on each block.

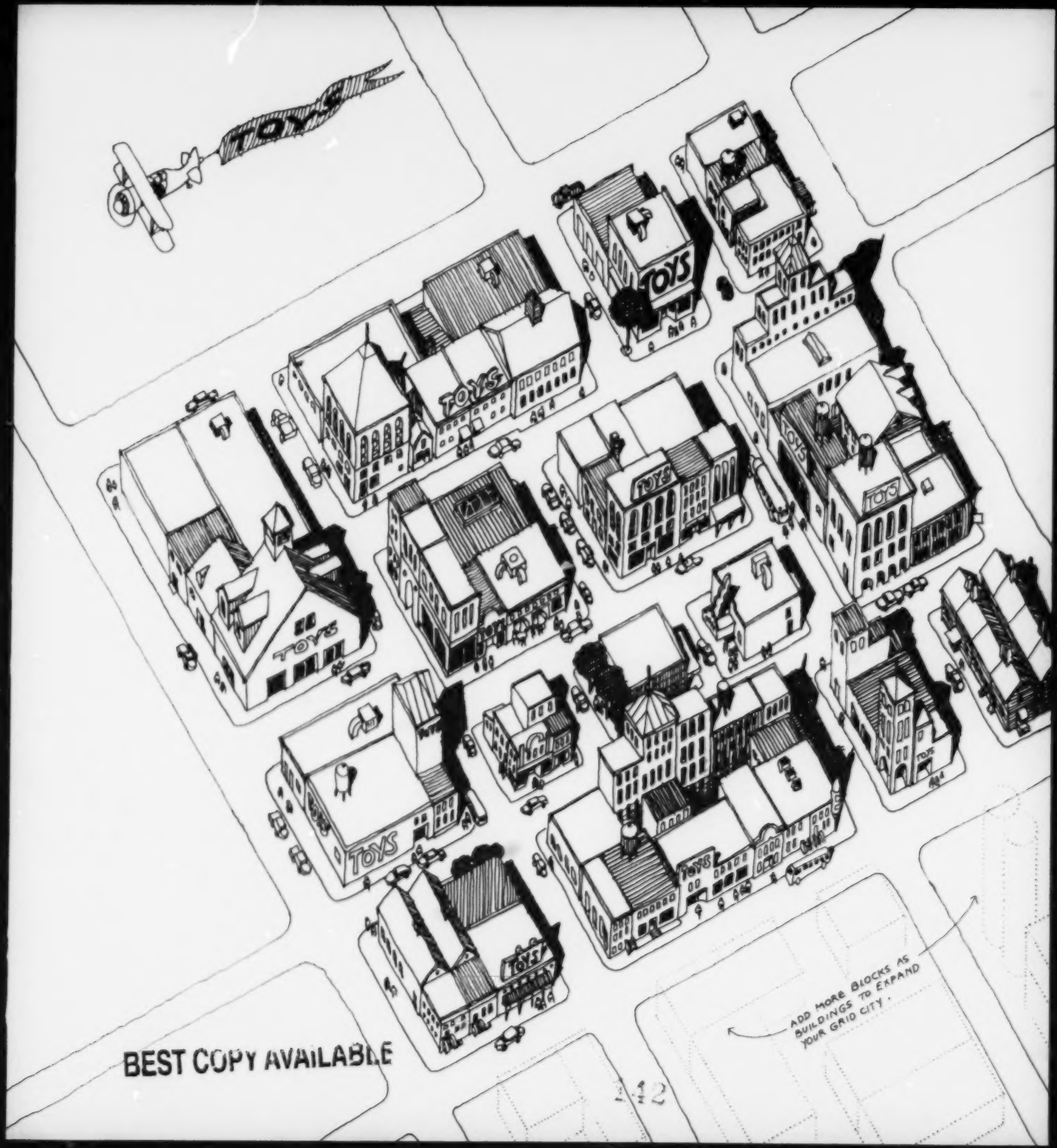
Any kind of toy your heart desires is sold in this city, and all you need to do is build the city, then drive around its streets in your micro-car Cadillac until you find the toy store you like. Pretend.

If you have any extra blocks, you may want to expand your grid city in any direction simply by making more buildings and streets.

Imagine a city that has a different toy store on every block and you are the proud owner of quite a few gift certificates and can buy anything you want.




THIS IS HOW THE BLOCK CONSTRUCTION OF THE TOY STORE CITY WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.
IMAGINE EACH BLOCK AS A GROUP OF BUILDINGS.
IMAGINE THE SPACES BETWEEN YOUR BLOCKS AS STREETS.



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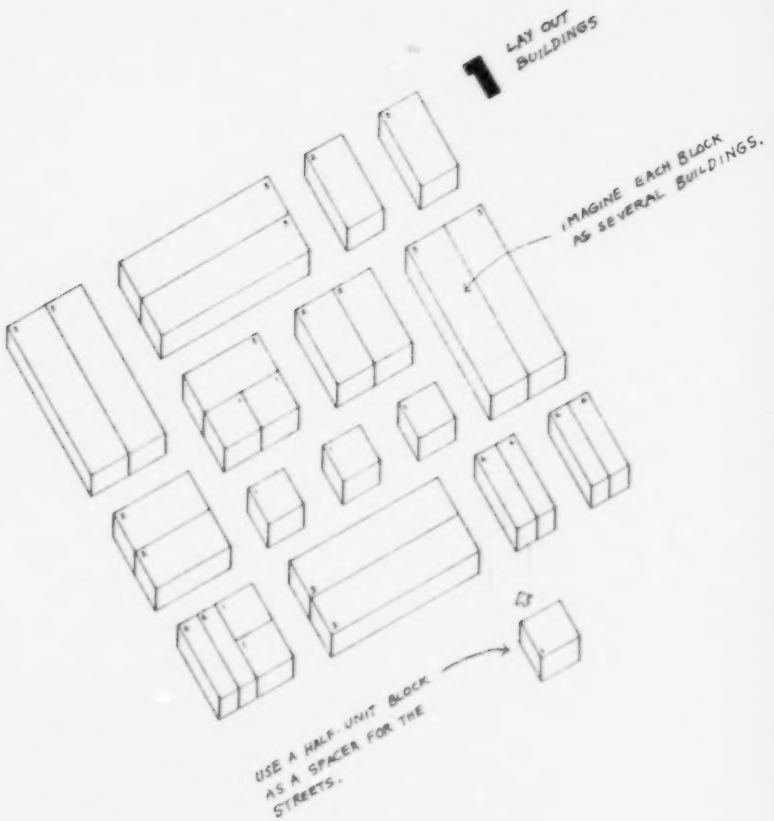
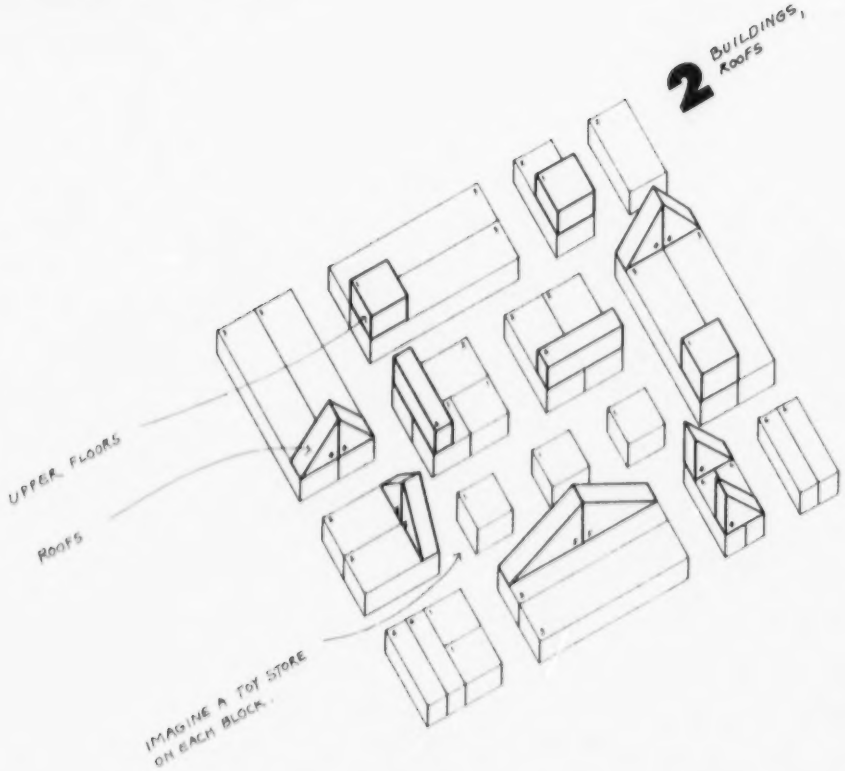
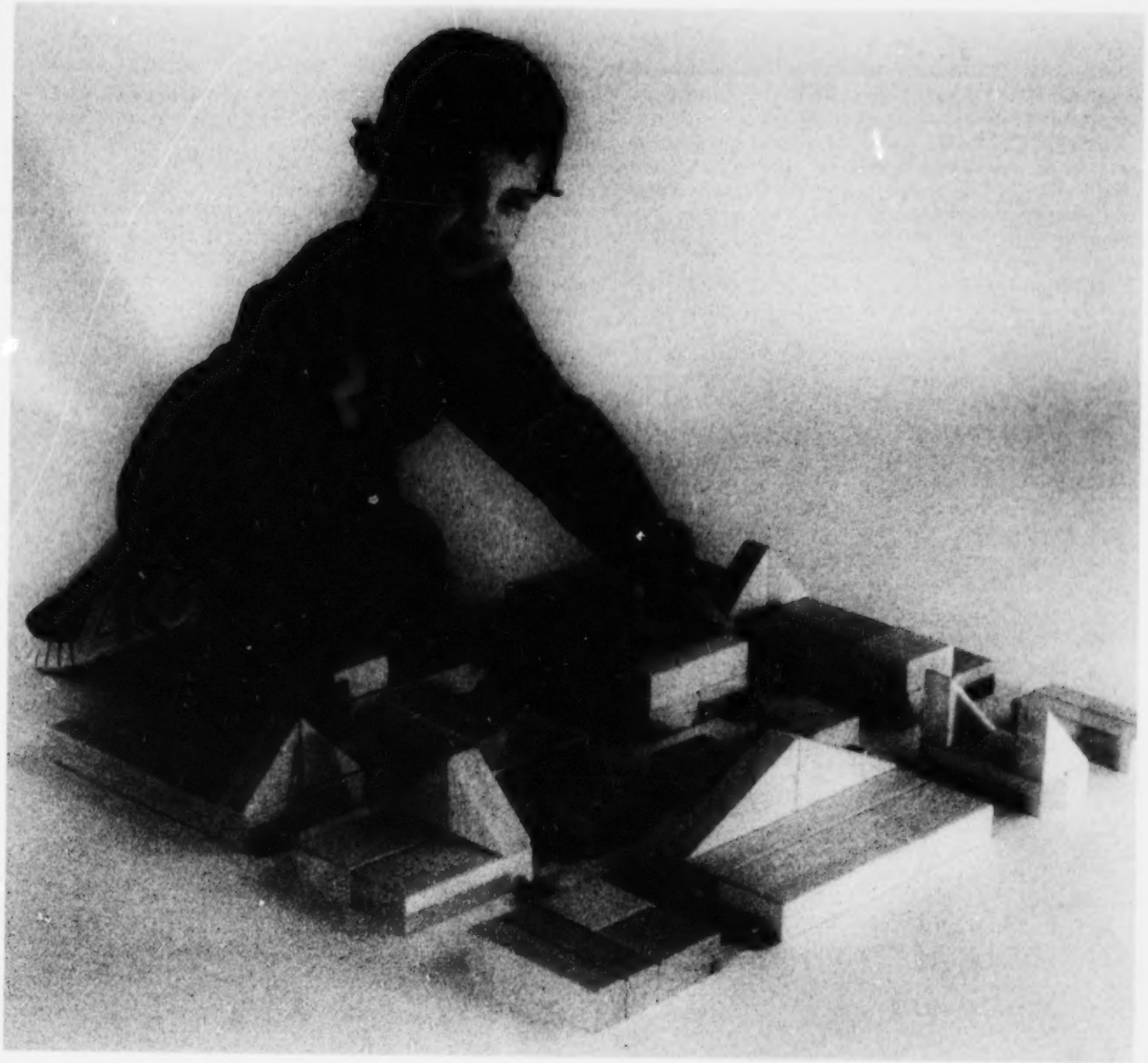
Begin building the Toy Store City by laying out the foundations and first floors of the buildings around a grid pattern of streets. It's easy to imagine that each of your blocks contains several shops and that the spaces between the blocks are sidewalks for people and streets for cars, trucks, and busses.



Complete the Toy Store City by adding the upper floors and roofs to the buildings in the grid. After you've finished this city, lay out your own design keeping in mind that the open spaces between the block buildings are the traffic pattern of the city.

You may want to get creative with your city and add a park by making more open space between blocks, or push the blocks together and make some kind of large building like a stadium or a department store. Don't hesitate to build any of your ideas, but remember that the open spaces you design are just as important to the city as the buildings themselves.





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A RADIAL CITY

THE EMERALD CITY OF OZ

The Emerald City of Oz is the wonderful capital city of The Land of Oz, which was visited by Dorothy, her dog Toto, the Tin Man, the Lion, and the Scarecrow in the famous book written by L. Frank Baum, *The Wizard of Oz*, and in the popular 1939 movie.

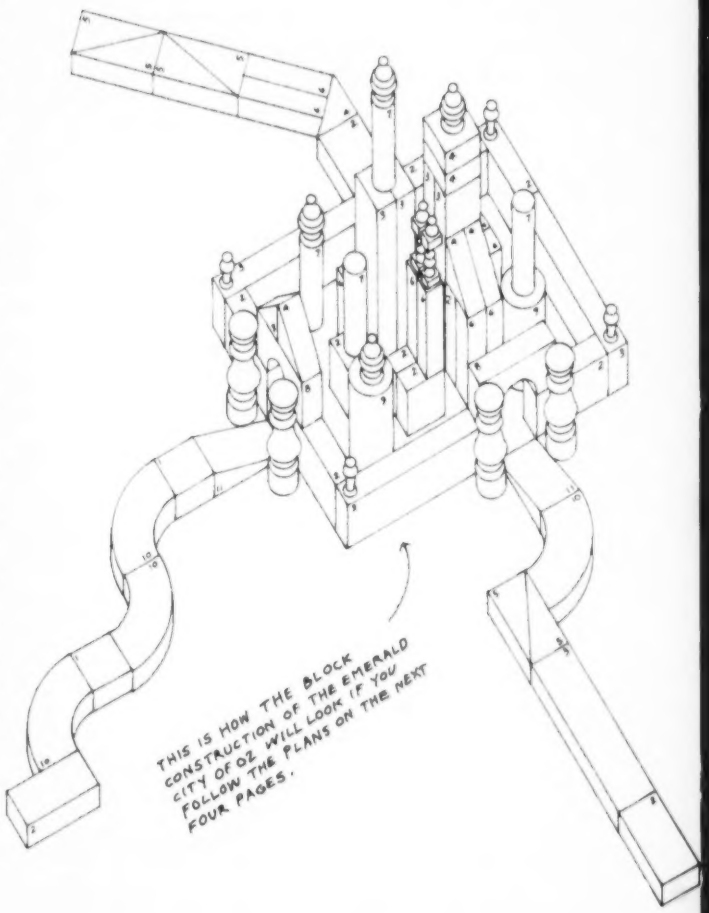
The Land of Oz is a very large tract of beautiful forests and farmland, completely surrounded by a vast desert and inhabited by over one-half million fairy-like people. Emerald City, with 9,654 buildings and 57,318 citizens, is located in the very center of The Land of Oz. Its streets and the walls of all its buildings are made entirely of emeralds. The interiors of most buildings are built of beautiful marbles and other jewels such as rubies, diamonds, sapphires, and turquoises. The Emerald City of Oz was "justly considered the most attractive fairyland in all the world," wrote L. Frank Baum. It was a true radial city since all roads led to it from all directions, through the desert and through The Land of Oz, like the spokes of a wheel lead to its hub.

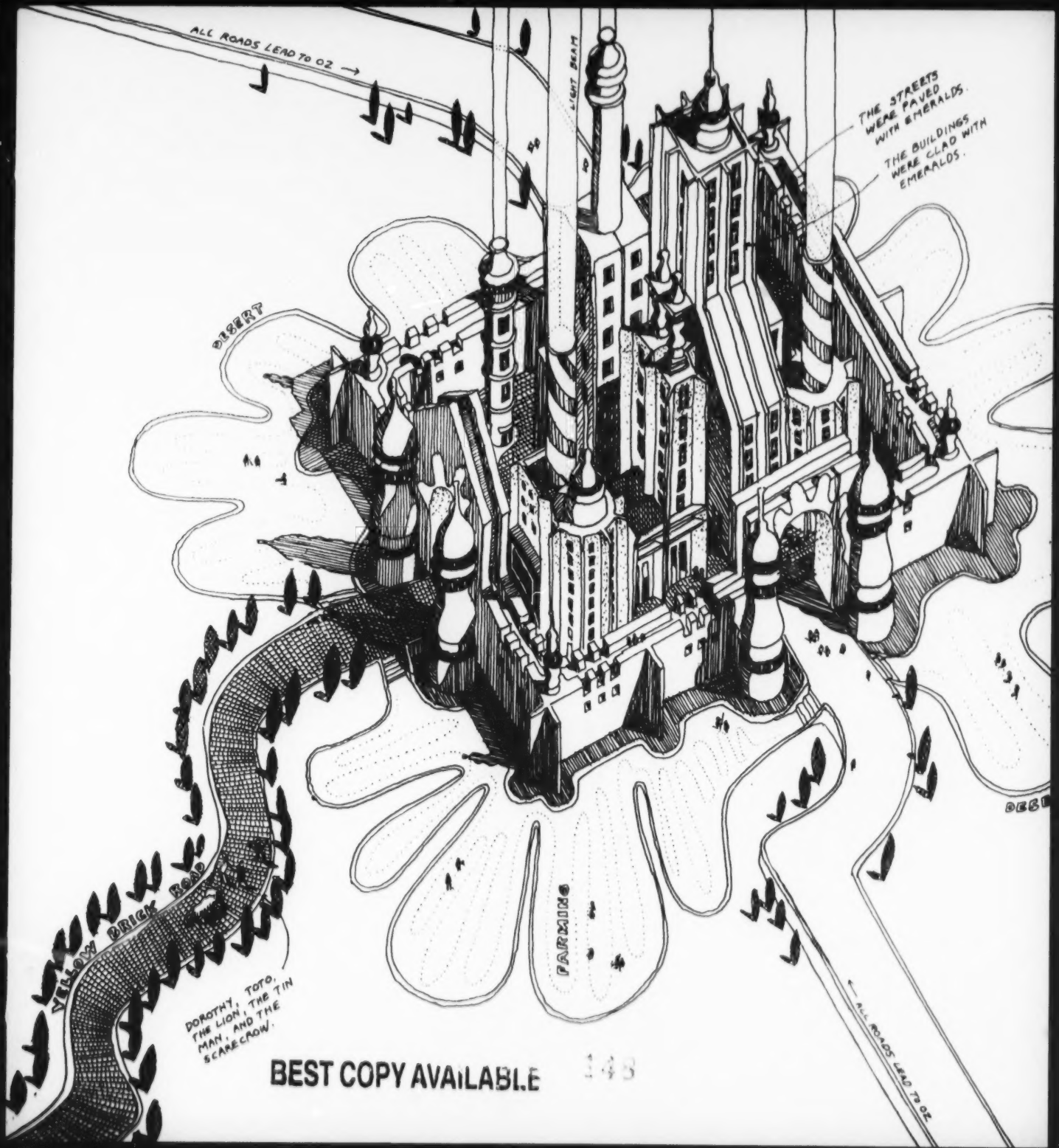
All people in The Land of Oz worked and produced necessary goods for the entire community. They worked half-time and played half-time. There was no disease, no poverty, and no crime because there was no money and no property. Everything belonged to the Ruler. The people were "peaceful, kind-hearted, loving, and merry, and every inhabitant adored the beautiful girl, known as Ozma, who ruled them, and delighted to obey her every command."

Our Emerald City of Oz is made with unit blocks and many of the wood turnings discussed on page 26. As mentioned there, the turnings are accessories to your block set that you buy separately. As you can see, they make wonderful decorative additions to any block design and are a must for this project.

You'll have to imagine the emeralds on the buildings and streets, and you'll have to imagine the 57,318 fairy-like people frolicking around your block city, but if you've got enough of the wood turnings, you can make this most attractive fairyland city in all the world.

Imagine walking on a road paved with yellow bricks, across a wide field to a glowing, shiny green city with your best friends, Dorothy, the Tin Man, the Lion, and the Scarecrow. As you enter through the gates to the city, would you be interested in meeting the wizard or going sightseeing in this fantastic place?




ALL ROADS LEAD TO OZ →
LIGHT BEAM
THE STREETS WERE PAVED WITH EMERALDS.
THE BUILDINGS WERE CLAD WITH EMERALDS.
DESERT
YELLOW BRICK ROAD
DOROTHY, TOTO, THE LION, THE TIN MAN, AND THE SCARECROW.
FARMING
← ALL ROADS LEAD TO OZ

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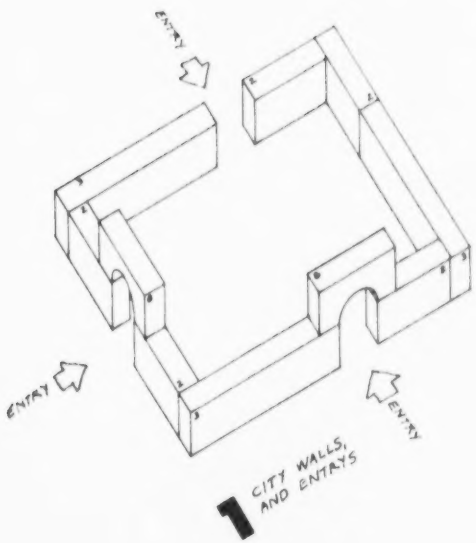
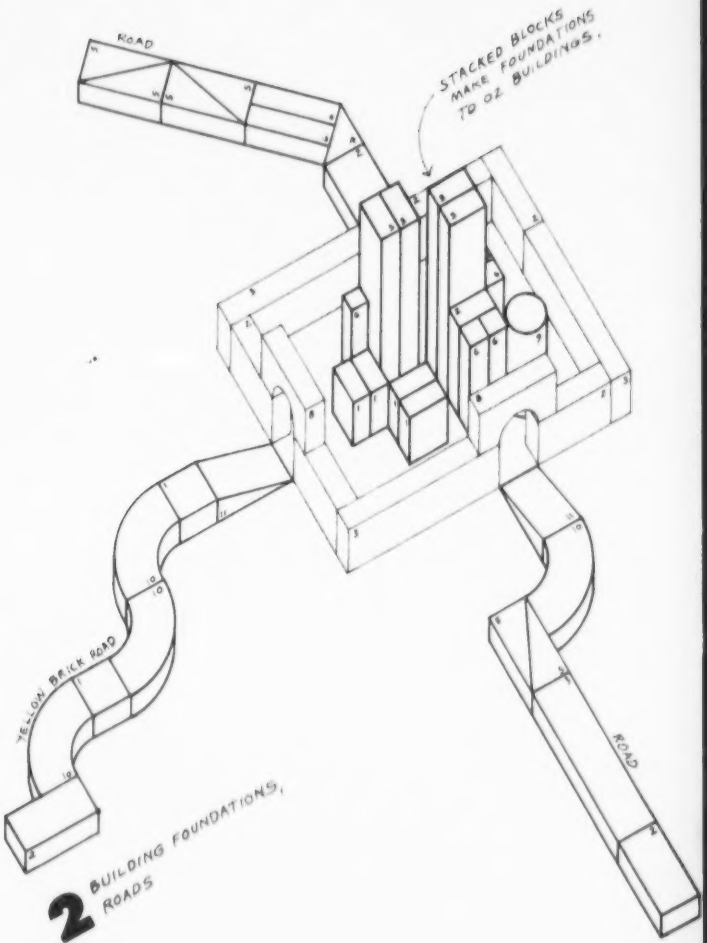
Begin The Emerald City of Oz by building the city walls and the three major entryways. Next, lay out the foundations and the lower floors of many of the buildings. Finally, build the roads entering the city, including the famous Yellow Brick Road, used by Dorothy, Toto, the Tin Man, the Lion, and the Scarecrow.



1 CITY WALLS, AND ENTRYS

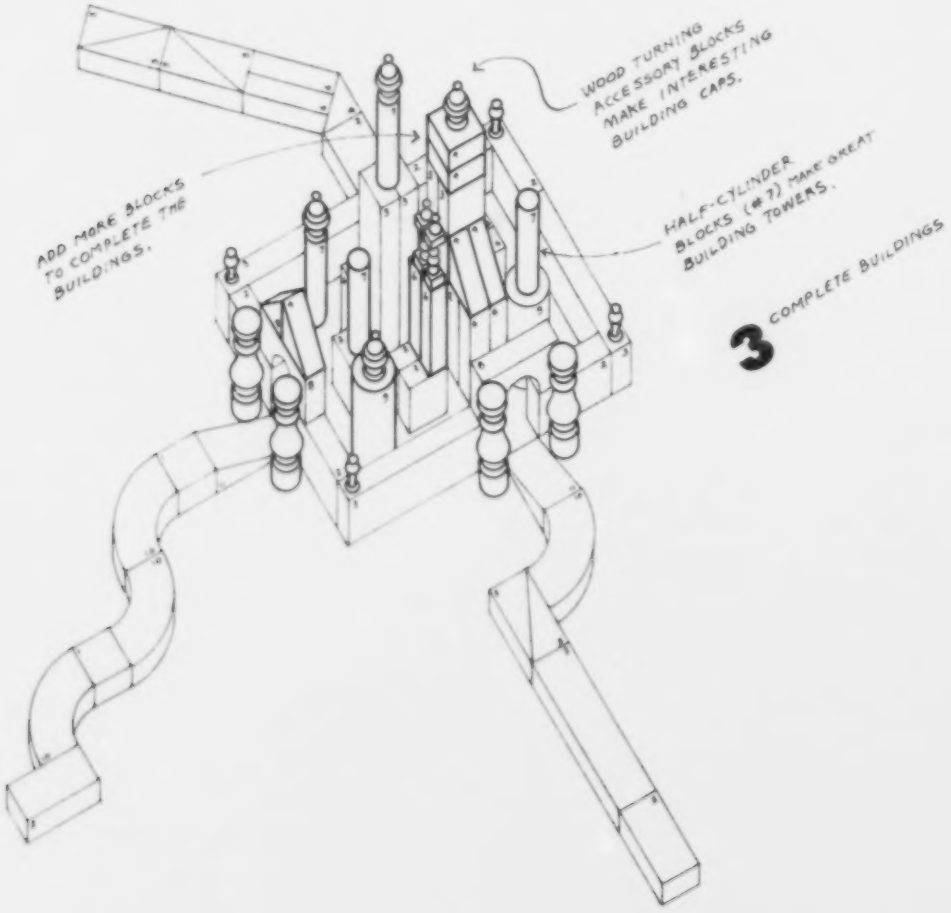


2 BUILDING FOUNDATIONS, ROADS

Finish The Emerald City of Oz by completing the buildings inside the city walls and capping them with wood turning accessory blocks. If you have any extra blocks, you might want to add to the three roads that are entering our city through The Land of Oz. Remember, The Emerald City is a radial city so all roads lead to it, including the famous Yellow Brick Road.

Once you've built this city, feel free to build your own radial city. Start with highways converging at a center spot. Then add the buildings around that central area. You might add suburban houses around the outside of your city and even a train line leading from the suburbs to the heart of your city.

Many cities in the world are radial cities, including Paris, London, and Moscow, so you may want to build one that you are familiar with, but, remember, always start with the main roads, then add the buildings. Good luck.


WOOD TURNING ACCESSORY BLOCKS MAKE INTERESTING BUILDING CAPS.
ADD MORE BLOCKS TO COMPLETE THE BUILDINGS.
HALF-CYLINDER BLOCKS (#7) MAKE GREAT BUILDING TOWERS.
3 COMPLETE BUILDINGS

A LINEAR CITY

CITY OF THE FUTURE

Our City of the Future will be one-half mile wide and 1,000 miles long with a high-speed monorail transit system running down its center to be used as public transportation carrying people along this very long, narrow metropolitan area. Our city is called a "Linear City" because it is very long and thin like a line.

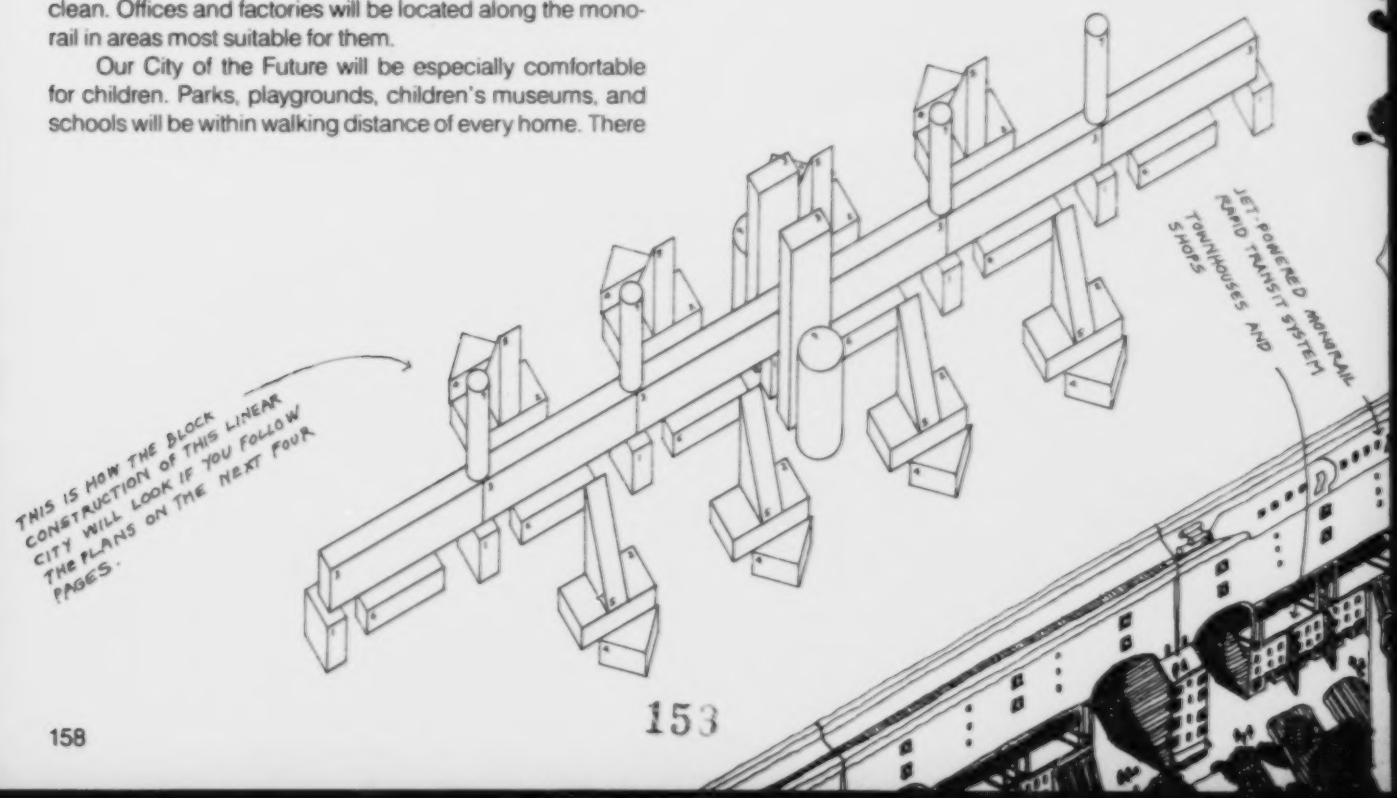
People will live and work within walking distance of our transit system, which will be so clean and efficient that autos will be unnecessary. Buildings will be located as close as they can to the rapid transit system because they will want to be where the people will be getting off and on the monorail. Small neighborhoods where people live will grow outside the commercial area but within walking distance of the rapid transit and the countryside. Cars will be rarely used and then only to drive to an unpopulated area for leisure-time activity.

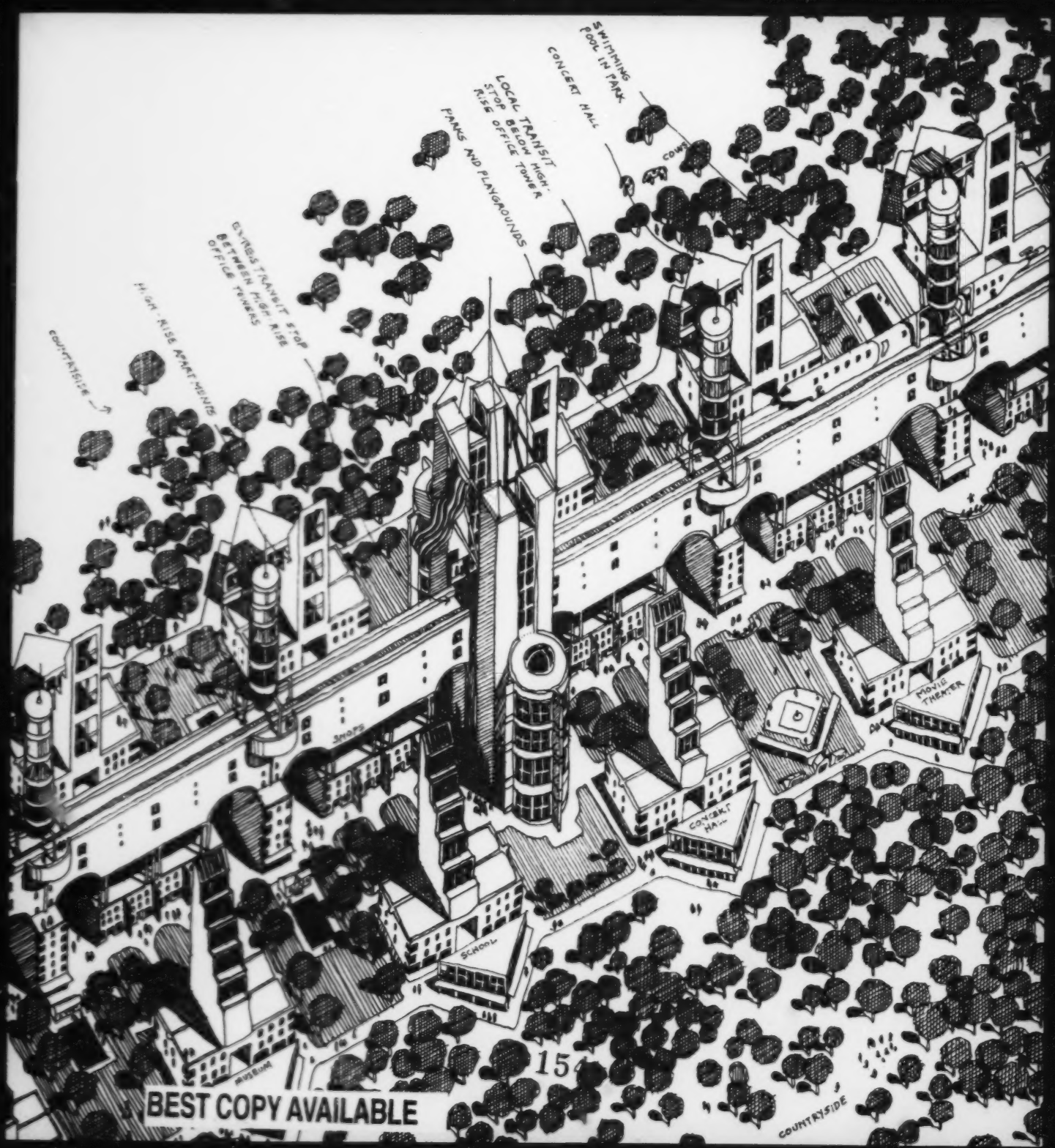
People will be able to travel from one end of the city to the other in two hours on the 500-miles-per-hour high-speed monorail line. It will be very pleasant to walk in our city because there will be no cars or buses, allowing the air to be clean. Offices and factories will be located along the monorail in areas most suitable for them.

Our City of the Future will be especially comfortable for children. Parks, playgrounds, children's museums, and schools will be within walking distance of every home. There will be no danger since we have eliminated cars and buses. Bicycles and the monorail will be the principal methods of child travel and these too will be safe since crime will have been eliminated.

As you build our linear city, try to imagine what kind of activity goes into each building block or open space you make. Please feel free to change our city into a utopian city of the future that you like. Think of ways you would like to make your life better and try to build them into your city design. Have fun being a city planner.

Imagine traveling eighty miles on a high-speed monorail in ten minutes to visit a friend in a different neighborhood in your city. Imagine that when you arrive you can't decide whether to walk to the downtown area to go to the zoo or to the countryside to visit a farm.


JET-POWERED MONORAIL RAPID TRANSIT SYSTEM
TOWNHOUSES AND SHOPS
THIS IS HOW THE BLOCK CONSTRUCTION OF THIS LINEAR CITY WILL LOOK IF YOU FOLLOW THE PLANS ON THE NEXT FOUR PAGES.



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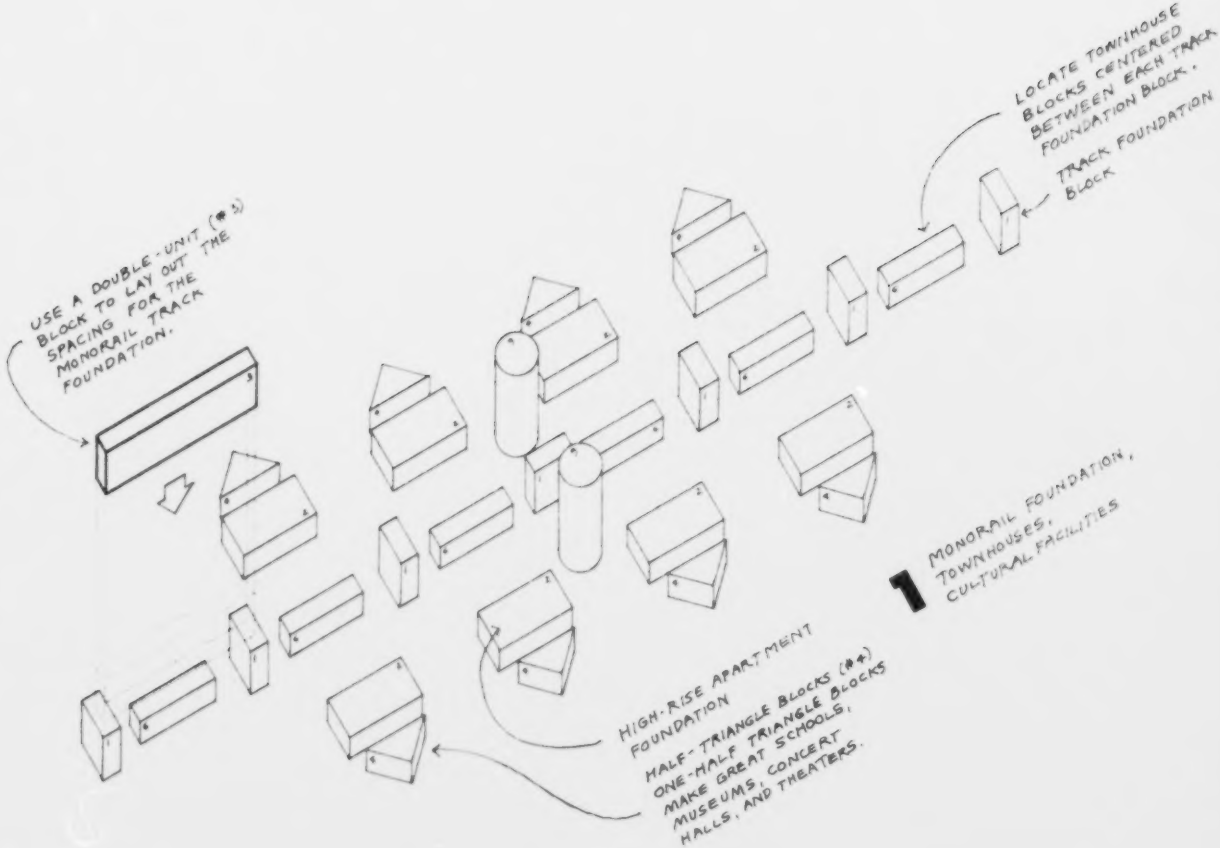
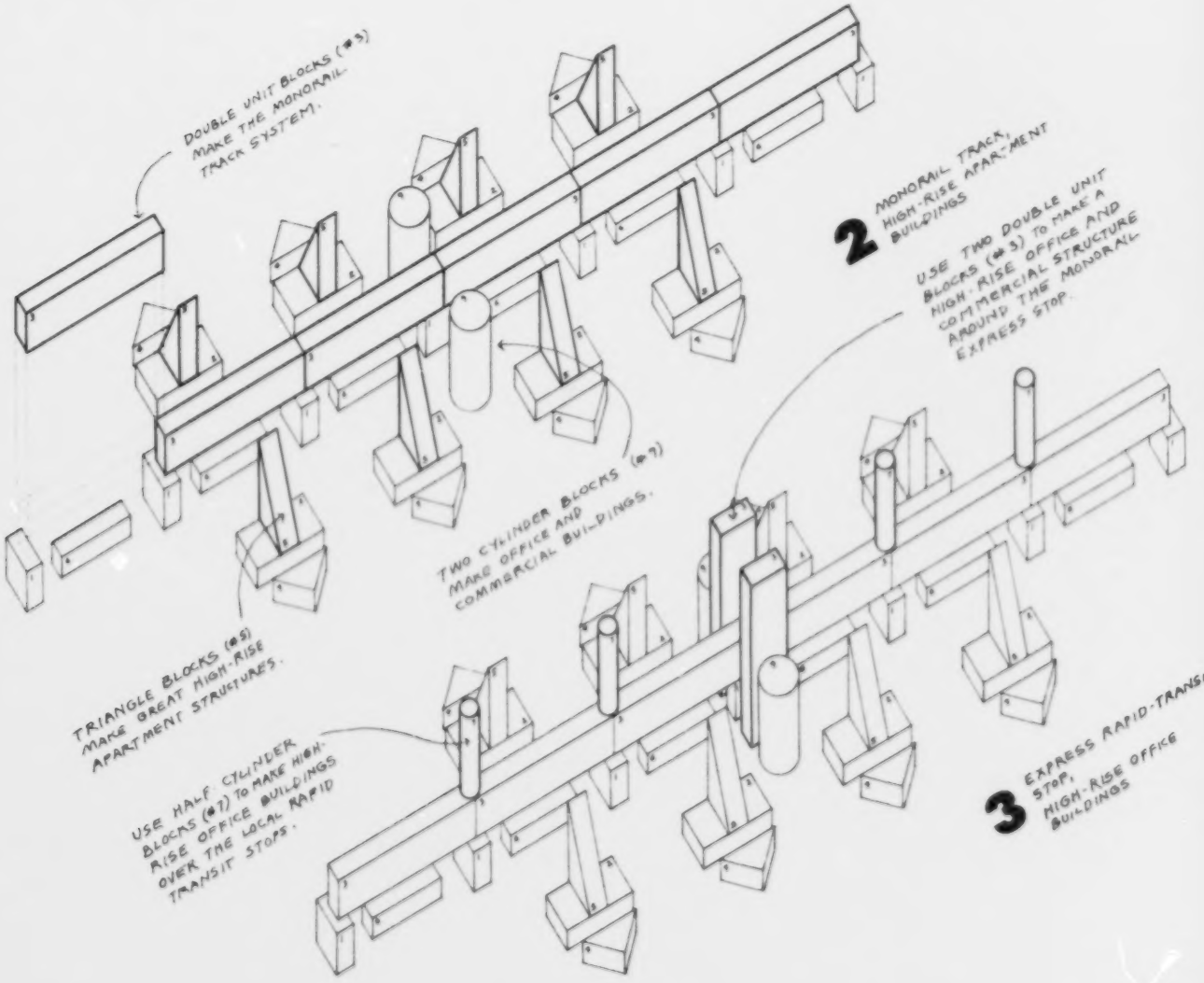
Begin building the City of the Future by constructing the foundations of the monorail and the foundations and first floors of the buildings around the monorail. Start building the monorail's express stops with two cylinder blocks. Take care with your spacing—remember the spaces between the blocks are pedestrian walkways, parks, and playgrounds.


USE A DOUBLE-UNIT (#2) BLOCK TO LAY OUT THE SPACING FOR THE MONORAIL TRACK FOUNDATION.
LOCATE TOWNHOUSE BLOCKS CENTERED BETWEEN EACH TRACK FOUNDATION BLOCK.
TRACK FOUNDATION BLOCK
1 MONORAIL FOUNDATION, TOWNHOUSES, CULTURAL FACILITIES
HIGH-RISE APARTMENT FOUNDATION
HALF-TRIANGLE BLOCKS (#4) ONE-HALF TRIANGLE BLOCKS MAKE GREAT SCHOOLS, MUSEUMS, CONCERT HALLS, AND THEATERS.

Complete the City of the Future by finishing the high-speed monorail and its express and local stops. Finish the office, commercial, and high-rise apartment buildings around the monorail. Imagine neighborhoods filled with happy people in and around the outside edge of the city.

Build the city as long as you can—after all it is a linear city—with as many blocks as you have. Feel free to add concert halls, a stadium, schools, or any other cultural facility you like along the monorail line, with any extra blocks you have. Make your city glisten with great activities. Make it one in which you would like to live in your future.


DOUBLE UNIT BLOCKS (#3) MAKE THE MONORAIL TRACK SYSTEM.
2 MONORAIL TRACK, HIGH-RISE APARTMENT BUILDINGS
USE TWO DOUBLE UNIT BLOCKS (#3) TO MAKE A HIGH-RISE OFFICE AND COMMERCIAL STRUCTURE AROUND THE MONORAIL EXPRESS STOP.
TWO CYLINDER BLOCKS (#7) MAKE OFFICE AND COMMERCIAL BUILDINGS.
TRIANGLE BLOCKS (#5) MAKE GREAT HIGH-RISE APARTMENT STRUCTURES.
USE HALF CYLINDER BLOCKS (#7) TO MAKE HIGH-RISE OFFICE BUILDINGS OVER THE LOCAL RAPID TRANSIT STOPS.
3 EXPRESS RAPID-TRANSIT STOP, HIGH-RISE OFFICE BUILDINGS

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Reit, Seymore. *All Kinds of Planes*. New York: Golden Press, 1978.

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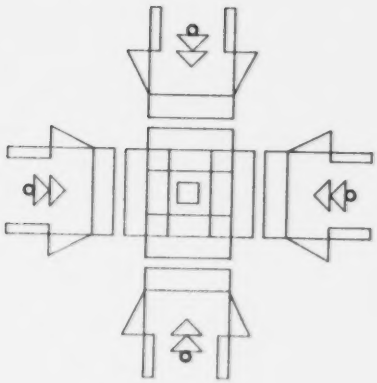

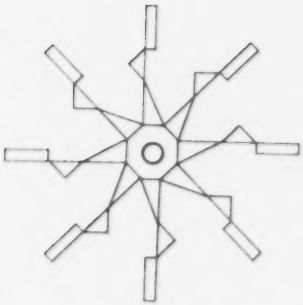

APPENDIX

Back To Basics Toys. 2707 Pittman Drive, Silver Springs, MD 20910, for unit blocks.

Childcraft, Inc. PO Box 29149, Mission, KS 66201-9149, for unit blocks.

Constructive Playthings. 1227 East 119th Street, Grandview, MI 64030-1117, for unit blocks.

Hearth Song. PO Box B, Sebastopol, CA 95473-0601, for block accessories.

The Great Kids Company. PO Box 609, Lewisville, NC 27023-0609, for unit blocks.

Woodcrafter Kits. Yarmouth, ME 04096, for old-fashioned cars and trains, wholesale only.

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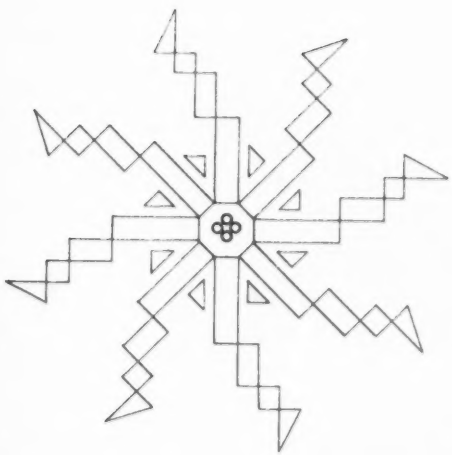
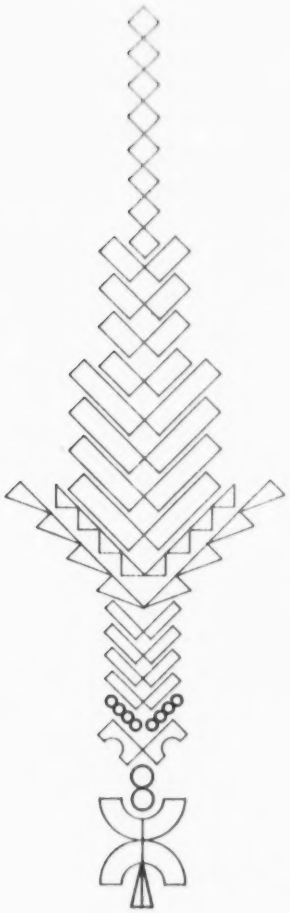
ACKNOWLEDGMENTS

Finally there are many people I want to thank for their help in preparing this book. First the people at The Overlook Press who have published my work for almost twenty years and who have always been such a pleasure to work with. Peter Mayer and Tracy Carns gave me guidance from the start and Irwin Rosen, Janelle Perry, and Maureen Nagy have provided good spirit and encouragement when it was most needed.

I would like to thank Dr. Harriet Cuffaro and Sal Vascellaro, members of the graduate faculty at the Bank Street College of Education in New York City, for giving me valuable consultation and a tour of their college.

I would like to thank Tim Hicks and Cassandra Mathis at HearthSong Catalog for their cooperation and for providing me with many of the accessories, such as the dolls and doll furniture; and Brenda at Woodcrafter Kits for supplying some wonderful old-fashioned wooden cars and trains for the photographs (see Appendix).

I would like to thank Megan McInnis for her valuable assistance in researching the stories beginning each block-building project, Jennifer Tucker for her work with the text, and Ben Caswell, John Kleinhans, and the Center for Photography at Woodstock, for their printing work with the photographs.

I want to thank the children who helped me by building and being photographed with the blocks: Liese Mayer, and Jordan and Ben Jenifer.

Most of all, I would like to thank my wife, Karen, and my son, Andrew, who were responsible for getting me involved with blocks in the first place, and ultimately, for so much inspiration, help, and guidance, with all the projects. Andrew loved working with me on weekends and says that some day he wants to be an architect.